A CLINICAL STUDY ON STANDARDIZATION OF SIDDHA DIAGNOSTIC METHODOLOGY, LINE OF TREATMENT AND DIETARY REGIMEN

FOR

AANN MALADU (MALE INFERTILITY)

Dissertation submitted to

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GOVT. SIDDHA MEDICAL COLLEGE AND HOSPITAL,

PALAYAMKOTTAI

DECLARATION BY THE CANDIDATE

I hereby declare that this dissertation entitled "A Clinical Study on standardization of Siddha diagnostic methodology, line of treatment and dietary regimen for Aannmaladu through Siddha parameters" is a bonafide and genuine research work carried out by me under the guidance of Dr.M.Krishnaveni, MD(s), Ph.D., Professor, Post Graduate Department of NoiNadal, Govt. Siddha Medical College and hospital, Palayamkottai and the dissertation has not formed the basis for the award of any Degree (other than MD Siddha), Diploma, Fellowship or other similar title.

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We approve the trial to be conducted in its presented form.

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INTRODUCTION

Siddha system of medicine

Siddha system of medicine is one of the ancient traditional systems of medicine of India and practiced mostly in its southern part. The word Siddha derived from the word *Siddhi* which means an object to be attained or perfection or heavenly bliss. Siddha is a science of life (science of daily living). Siddha system of medicine takes a major role in all aspects of human being. Especially it leads to get prevention of disease and long healthy life. As well as it contains the disease diagnostic, treatment plan and management to cure the disease.

The *siddhars* were the greatest scientists of the world. *Siddhars* used their super natural wisdom to keep the world healthy has invented the wonderful medicines as well as design life style methods (yoga and meditation) to prevent and cure the diseases. In addition they devise and propounded the diagnostic methods as *Ennvagai Thervugal* (eight examinations) to diagnose the disease. At the time of *siddhars*, there was no technological advancements as today, even though the *siddhars* designed tools for the investigation purpose from natural resources using simple technology. They wish to convey the art of diagnosis methods and appreciation of prognosis to the contemporary world.

Ancient literature documented 4448 diseases and the treatments. *Aann maladu* is one of the disease in the 4448 diseases. *Aann maladu* may be compared with male infertility in western medicine. The patient unable to produce a child as he has to face number of problems in the family as well as in the society. Currently it is one of the major problems in the society. Early diagnosis of the disease lead to avoid permanent illness.

Male Infertility

Infertility representing a significant social, medical and economic burden for individual and the society.World widely it affects average 25% of couples. Currently World Health Organization (WHO) estimate, infertility affects one in six couples worldwide, and it is known that the male is involved in up to 50 % of cases. In India infertility is a common and distressing problem. It affects 10-15% of couples of child bearing age. Male partner is responsible nearly 5-7.5 % of cases and particularly sperm related problems as low sperm concentration (oligospermia), poor sperm motility (asthenospermia), and abnormal sperm morphology (teratospermia). Approximately 10% of infertile men are azoospermic. Genetic disorders are one of the main

causes and associated with chromosomal (gonosomal) aneuploidy or structural rearrangements to mutations or microdeletions. In infertile men with a chromosomal abnormality, 2.7% shows oligospermia & 10.8% shows azoospermia. Chromosomal aberrations are mainly represented by sex chromosomal defects, which are twice as high in infertile men compared with controls. Idiopathic male infertility caused by several factors as chronic stress, endocrine disruption due to environmental pollution, reactive oxygen species and genetic abnormalities (WHO 2000). Unaetiological infertility should need chromosomal studies. At least 5% of azoospermic males have been found to have Klinefelter syndrome.

Male Infertility (*Aan maladu*) and Siddha system of medicine

One of ancient Siddha medical text book *Yugimuni chikichcha saram* (*mahalir maruthuvam*) written by the ancient saints described the semen characters of *Aann maladu* (male infertility).

ஆண் மலட்டின் குணம்

பார்க்கவே ஆண்மகனின் விந்துதானும்
பதமான தித்திப்புயில் லாததாலும்
ஏற்கவே சலமீதல் மிதந்ததாலும்
ஏழிலாகவுயிர்ப்பற்றுயிருப்பதாலும்
சேர்க்கவே மூத்திரத்தில் நுரைதான் போலும்
செயலான கருவதுவும் தரிக்கமாட்டா
தீர்க்கவே யூகிமுனிசிகிச்சாசாரம்
தெளிவாகப் பாடிவைத்தார் திறமிதானே.

- **யூகிமுனி சிகிச்சாரம்** (மகளிர் மருத்துவம்)

The verse stated the characters of the semen of infertility patient. It describes, absent or less sugar content available in the semen of infertility patient. The semen is in upper surface, when put into water or urine or sperms available in upper surface of seminal fluid. Non active or non-alive sperms.Sperms available in urine as froth.If the semen or sperm of a person have these characters, who are unable to produce a child.

Modern laboratory reports of semen analysis consists the semen fructose (sugar) and sperm count and percentage of motile of sperms (active and alive sperms) in seminal fluid in addition to the immunoassay, as parameters to detect the infertility. The parameters described in *Yugimuni chikichcha saram* nearly equal to the modern parameters.

Current study and diagnostic methods of male infertility

Diagnosis and trace the cause of infertility are essential to the treatment. Currently a number of scientific laboratory parameters available to detect the infertility in the modern medical practice. Even though the *saints have used number of parameters to detect the infertility and find out the aetiology, whereas all the techniques that described by saints were hided according to various reasons. Some printed literatures* written by the ancient saints, *described these techniques in the form of verses. It is essential to discover all these techniques practically to explore to the world. Scientific research is a method to explore the Siddha diagnostic methods for Aann maladu* (male infertility) to the world. Modern diagnostic methods used for the confirmation studies only. We are expecting to document the Siddha diagnostic method to diagnose the male infertility (*Aann maladu*) at the end of the study. It will be useful to not only Siddha system of medicine also to entire world.

AIM AND OBJECTIVE

Aim

A Clinical Study on Standardization of Siddha Diagnostic Methodology, Line of Treatment and Dietary Regimen for "*Aann Maladu*"

Objectives

- **Primary objective:**
    - To document the ancient semen analysis technique in the diagnosis of '*Aann Maladu'*

- **Secondary objective:**
    - To document the *Ennvagai Thervugal* in the diagnosis of *'Aann Maladu'*
    - To frame the Diagnosis based on *Iympul Iyakka Vidhi (Panchapatchi)*
    - To establish line of treatment
    - Documenting dietary regimen

REVIEW OF LITERATURE

விந்துற்பனம் (விந்துவின் தோற்றம்)

உலகத்தின் தோற்றத்திற்கு மூலமான சுத்தம் முதலான மாயையினின்று விரியும் வகையும் அண்டத்தில் விந்துவினின்று புணர்ச்சியாகிய காரியத்தான் கரு உருக்கொள்ளுமாறு அண்டம் பிண்டம் இவற்றை இணைத்தே கூறுவராதலின் ஈண்டும் சில மந்திரங்களான அண்ட நிலைக்கு அடியான பர அபர விந்துவின் வெளிப்பாட்டையும், பிண்டத்திற்குக் காரணமான கரு விந்துவின் தோற்றத்தையும் உணர்த்துகின்றது.

According to *Thirumoolar* Says,

‘உதயத்தில் விந்துவில் ஒங்கு குண்டலியும்
உதய குடிலில் வயிந்தவம் ஒன்பான்
விதியில் பிரமாதிகள்மிகு சக்தி
கதியிற் கரணங் கலைவை கரியே’’

திருமந்திரம் பாடல் எண். 1898

‘அழிகின்ற விந்து அளவை அறியார்
கழிகின்ற தன்னையுட் காக்கலுந் தேரார்
அழிகின்ற காயத் தழிந்தயர் வுற்றோர்
அழிகின்ற தன்மை யறிந்தொழி யாரே’’

திருமந்திரம் பாடல் எண். 1899

அழிகின்ற வெண்ணீராகிய விந்துவின் அளவை கூறுங்கால் எண்பது துளி செந்நீர் ஒரு வெண்ணீரின் துளியாகும். இத்தகைய எண்பது வெண்ணீரின் துளியே ஒரு முழுத்துளி விந்துவாகும். எனவே ஒரு துளி விந்து அழியின் ஆறாயிரத்து நானூறு துளி செந்நீர் அழிந்ததாகும். ஆயிரம் சொட்டு குருதியும், மூவாயிரம் சொட்டு ரத்தமும், சுக்கிலமும் சுண்டிக்கலந்ததே ஒரு சொட்டு விந்தாம்.

அழிகின்ற விந்துவின் அளவை அறியாத மக்கள் இறந்து அழிகின்ற தன்மை மணத்தால் காலத்தையும் தெரிய மாட்டார்கள். அழிகிற உடலில் அழிந்து சோர்ந்தோர் தாம் அழிவதை அறிந்தும் விந்து அழிதலை ஒழியார்.

According to ***ThirumoolarThirumanthiram*** one drop of white cells (*venner*) was made upto 80 drops in blood (*seneer*), one drop of semen (*vinthu*) was made from 80 drops of white cells. Therefore one drop of semen it contain to 6400 drops of blood.

சுக்கில குணம்

According ***Sivavakkiyar padal*** says,

‘உண்மையான சுக்கில முபாயமாயிருந்ததும்
வெண்மையாகி நீரிலே விரைந்து நீரதானதும்
தண்மையான காயமே தரித்துருவமானதும்
தென்மையான ஞானிகள் தெளிந்துரைக்க வேணுமே’

***Moolamum uraiyam*, page – 202**

விந்துவானது தாயின் கருப்பத்தில் வெகுதந்திரமாகச் செல்லுகின்றது என்பார். அங்ஙனம் புகும் போது எல்லாம் நீராக விடையிலிருக்கும் நீரில் கலந்து ஒரு பனித்துளியளவே நிலைத்திருக்கும் என்பார். அந்த சிறிய அளவே பெரிய ரூபமாய் பரிணமிக்கின்றது என்பார். இவ்வரிய பெரிய விடயம் ஞானிகளுக்கே புலப்படுவதாகும்.

The semen function is creation and creativity it can be used for the production of artistic (or) intellectual creations.

வெந்நீர் குறை குணம்

புணர்ச்சியில் வெண்ணீரும் சுரோணிதமும் பொறுத்துப் பொறுத்து துளித் துளியாய் விழுதல், அல்லது செந்நீர் வெளிப்படல், விதையில் குத்தலுடன் வலி, குறியில் அழற்சி மிகுதிப்படல்.

சுக்கிலத்தன்மை

Dr. *M.Shanmugavelu* is explained in pathology Part I, Less quantity of the semen (Oligospermia) production it causes

- வெண்மையும், வெண்ணெய்க்கு நிகராயுமிருப்பின் உத்தமத்தில் உத்தமம்.
- வெண்மையும் தயிருக்கும் நிராயுமிருப்பின் உத்தமத்தில் இரண்டாந்தர உத்தமம்.
- வெண்மையும் பாலுக்கு ஒப்பாகவுமிருப்பின் மத்திமத்தில் உத்தமம்.
- வெண்மையும் மோருக்கு ஒப்பாகவுமிருப்பின் மத்திமத்தில் மத்திமம்.
- தேனையும் அதன் நிறத்தையம் கனத்தையும் ஒத்திருந்தால் அதமத்தில் உத்தமம்.
- நெய்யையும் அதன் நிறத்தையும் கனத்தையும் ஒத்திருந்தால் அதமத்தில் மத்திமம்.
- கள்ளைப் போன்ற நிறமும் தடிப்புமிருப்பின் அதமோ அதமத்தில் உத்தமம்.
- தண்ணீரைப் போலிருப்பின் சாரம் முதலிய உடற்தாதுக்களிலும் சற்றும் சாரமற்றவனென்றும், உயிருடன் இருந்தாலும் பிணத்துக்கு ஒப்பானவனென்றும் தேரையர் யமகம் கூறுகிறது.

If the semen is,

- White and akin to the butter, it is excellent.
- White and akin to curd, it is very good.
- White and akin to the milk, it is good.
- White and akin to the butter milk, it is fair
- Akin to the honey in colour and consistency, it is average.
- Akin to the ghee in colour and weight, it is poor.
- Akin to the toddy is colour and weight, it is very poor.
- Akin to the water, it is very bad.

Thus *Siddha* text books are clearly explained, the constituents of seminal fluid.

Function and relativity with *Pancha bootham*

‘உன்னிய கர்ப்பக் குழியாம் வெளியிலே
பன்னிய நாதம் பகர்ந்த பிருதிவி
வன்னியும் வாயு மாயுருஞ் சுக்கிலம்
மன்னிய சமனாய் வளர்க்கும் உதகமே’’

திருமூலர் திருமந்திரம்

(*Noi Naadal Noi Muthal Naadal Thirattu* - Part - 1 - page - 30)

கருப்பைக்குழி ஆகாயமாகவும் நாதம் பிருத்வியாகவும் சுக்கிலத்தினை வாயுவாகவும் பாவித்து கரு வளர்வதற்கு இடமளிப்பது கருப்பை எனவும், கருவை தோற்றுவித்து அதற்கு உணவை அளிப்பது நாதம் எனவும், வளர்ச்சிக்கு வேண்டிய சூட்டை வாயுவையும் விந்து பெற்றுள்ளது எனவும், இது சூட்டையும், வாயுவையும் நாதத்திற்கு தந்துதொழில் புரிவதால் நாதம் கருவாக வளர முடிகிறதென்றும் உதகமாகிய நீர் யாவற்றையும் நேர்மையாகவும், செழிப்பாகவும் வளரச் செய்யும் என்பதாகவும் அறிகிறோம்.

The ovum consists of the element earth, whereas the sperm consist of fire and air. The uterine wall which nourishes, it has water and uterine cavity is of the element of space. Therefore in the formation of fetus all the five elements combine and create it.

Determination of gender of embryo

Thirumoolar Says

‘ஆண்மிகில் ஆனும் பெண்மிகில் பெண்ணும்
பூண்இரண் டொத்துப் பொருந்தில் அலிஆகும்
தாணமிகும் ஆகில் தரணி முழுதாளும்
பாவை மிக்கடில் பாய்ந்ததும் இல்லையே’’

திருமந்திரம்

(*Noi Naadal Noi Muthal Naadal Thirattu*, Part – 1, page - 32)

At the time of copulation if the male dominates then it is male and if the female dominates then it is a female. If the male and the female are equal then the child will be natural gender or aeunuch. Here male indicates the *vindhu* and the female indicates *suronitham*.

The role of *vayu* in fertilization

‘வேர்க்கவே வேலிபோல் வளைந்து காக்கும்
விந்துவுடன் பிராணவாயு விளக்கலாமே’’

யூகிமுனி

***(Noi Naadal Noi Muthal Naadal Thirattu*, Part – 1, page - 34)**

Abana vayu stays outside the vagina to protect a zygot. The *prana vayu* goes along with spermatozoa in the uterine cavity to developments of embryo.

Centre for spermatogenesis

According *to Gnana Vettiyan* says,

‘விந்து குடியிருந்த திருநாட்டை விட்டேன்
மாறுகின்ற கத்திரிக்கோல் பட்டந்தனில்
விந்துநின்று விளங்குநதி மையத்துள்ளே
விளங்கு சுவாதிட்டான வெளியிலேதான்’’

திருவள்ளுவர் ஞானவெட்டியான்

(*Thiruvalluvar gnana vettiyan ennum gnanavetti* –1500, page - 66)

The *swathittanam* is placed in between the genitals and umbilical region. The *swathittanam* is more responsible site for normal male sexual activities and functions. The entire spermatogenesis activities can be controlled by anterior pituitary gland (Anterior pituitary hormone)

Etiology (நோய் வரும் வழி)

- **According to *Noi naadal noi muthal naadal thirattu*(Part – 1)**

‘பெண்ணின் பாலிந்திரியம் விடும்போதெல்லாம்
பேணிவலம் மேல் நோக்கி அவற்றில் நில்லு

அகத்தியர் உயர் ஞானம், Page – 31

ஆண் பெண் இருவரது ஞானேந்திரியம், கன்மேந்திரியம், மனசு ஆகிய இப்பதினொன்று தத்துவங்களும் ஒன்று கூடிய சமயம் ஆண் பெண் மௌனமாய் இருத்தல் அவசியம்

At the time of matting the following 11 *thathus (5 Kanmenthriyam, 5 Gnanenthriyam* and *Manathu*) are combined each together its forming the good fertilized Ovum.

- **Infections causing male infertility**

Karumpanichchai ammai

‘அறிந்தபின் இவர்களுட குணந்தானப்பா
அந்தந்த சரீரத்திற் கடுத்த வாராய்
தெரிந்ததொரு குணக்குறிகள் தோன்றுமப்பா
திறமான கரும்பனிசை விந்தைக் கொல்லும்
பரிந்ததொரு கெர்ப்பத்தை யழியப் பண்ணும்
பண்பாக கயவர்களுக்குப் பிள்ளையில்லை
முரிந்ததொருயிவர்களுட குணமுஞ் சொன்னேன்
முறைமையுடன் மருந்துவகை சொல்லக் கேளே’

அகத்தியர் வைதூரி நூல்

(Noi *Naadal Noi Muthal Naadal Thirattu*, Part – 2, page – 66)

The complications of the *karumpanisai ammai* are

- ❖ Death of the sperm cells in male – azoospermia.
- ❖ Abortion in pregnant women – habitual abortion due to viral endometritis.
- ❖ Produce in sterility in both men and women

This type of *Ammai Noi* produced viral epidymo orchitis in men. This can cause disturbances in spermatogenesis activity.

In female *Ammai Noi* produced bilateral tubal block (Bilateral Hydro salphinx) it may caused by female sterility.

- **Traumatic causes of infertility**

‘செய்வதே கல்லிடைக்காலம் கொண்டாலல் விரையிரண்டும்
துய்யவே தளார்சையுண்டாம் விரைதான் காணாதாகும்.
உய்யவே மூச்சடைக்கும் ஒச்சையும் குறைந்து போகும்
மெய்யவே கையாகத்தால் மேவினில் வகையிதாமே’

(வர்மலாட சூத்திரம் - 300)

- **கல்லிடை காலம் குறி குணம்**

விதை இரண்டும் காணாது, சத்தம் மூச்சுக் காணாது, சிறுநீரைக் குறைக்கும், வயிறு ஊதும், மூச்சு விடாது உறங்கும், இரத்தம் வந்து கட்டிக் கொள்ளும், சதை வளர்ந்து விடும்.

Both testes cannot be felt in scrotal sac, scanty micturition, abdominal distension, deep sleep, accumulation of blood and fluid in the abdominal cavity. This characteristic features are correlated in Modern Science are,

1. Cirrhosis of Liver with ascitis
2. Undescended testis (or) testicular Atrophy
3. Congenital bilateral anorchia
4. Fatty Liver changes followed by Ascitis (Abdominal distension)

These are the etiological factors it can cause for male infertility.

- **அண்டத்தில் வர்மம் குறி குணம்**

விதையிரண்டும் உயரத்தில் ஏறும்

Both Testes are displaced above

Traumatic injuries in the Lumbosacral Nerve Plexus. (Pudental nerve) can cause impotence, leads to infertility (விதை முளையில் - **விந்து வர்மம்,** லிங்கத்தில்- **லிங்க வர்மம்)**

Male infertility related in Siddha literature

- **சுக்கில வாதம்**

‘வாதமா முடலுருகி மிகவும் வற்றி
மலமூத்திரஞ் சிக்கியே கீழ்விழாமல்
நாதமாம் நாக்கோடு மூக்குதன்னில்

நணுக்கமா யுதிரந்தானருவி பாயுஞ்
சேதமாய்ச் சேட்டுமமுங் கோழையுண்டாஞ்
செயலோடு சுவாசமா யருசியுண்டாஞ்
சூதமாய்ச் சுக்கிலந்தான் றுன்னி யாகுந்
துரியசுக் கிலவாத சூட்சந்தானே'

-யூகிமுனி

(N*oi Nadal Noi Muthal Nadal Thirattu*, Part – 2, page - 574)

According to the *Yugimuni* the clinical features are

- Generalised weakness
- Epistaxis
- Constipation,
- Urinary incontinence
- Chronic Bronchitis
- Tasteless tongue
- Loss of appetite

SIDDHA PHYSIOLOGY

According to the five element theory, the human being is a small model of the universe siddha physiology explains relations of macrocosam (universe) and microcosam (Man).

Siddha physiology provides the better meant for the maintenance of the normal equilibrium of the *thathuvams*, thereby keeping the physical body and mind in a normal functioning state.

This involves the following in addition to the 96 *Thathuvams*

1. *Udal Thathukal* - 7 somatic compounds
2. *Vegams* - 14 remedial functions
3. *Suvaigal* - 6 tastes
4. *Udartee* - 4 body fire
5. *Udal vanmai* - 3 immunities

***Udal Kattukal* 7 – Constituents of the physical body.**

It plays a very important role in the development and nourishment of the body, they are as follows,

1. Saram

It consists of dietary nutrients from ingested food and nourishes all the tissues, organ and systems through the blood.

2. Senneer

It governs the oxygenation and supplying the saram to all the tissues and it is responsible for the nourishment, vigor, strength and color of the body.

3. Oon

It gives the bulky appearance and look able contour of the body, which is needed for the physical activity and also forms the basic skeletal structure of internal organs too. It also performs the movements of the joints and maintains the physical strength of the body.

4. Kozuppu

It maintains the lubrication of all tissues and gives energy, to the body.

5. Enbu

Forms the basic skeleton of the physical body, it support and protect the organs and it is a fundamental requirement for posture and movement of the body.

6. ***Moolai***

   Bone marrow nourishes the tissues of bone.

   Brain is the central nervous system of the body.

7. ***Sukkilam / suronitham***

   Responsible for the reproduction and also provides strength to the human body.

***Vegams* – Reflexial Functions:**

Reflexes are essential for the normal function of the human body, they are.

1.	*Abana vayu*	-	Downward force
2.	*Thummal*	-	Sneezing
3.	*Siruneer*	-	Micturition
4.	*Malam*	-	Defaecation
5.	*Kottavi*	-	Yawning
6.	*Pasi*	-	Hunger
7.	*Neervetkai*	-	Thirst
8.	*Erumal*	-	Coughing
9.	*Elaippu*	-	Exhaustic veners
10.	*Thookam*	-	Sleep
11.	*Vanthi*	-	Vomiting
12.	*Kanneer*	-	Lacrimation
13.	*Sukkilam*	-	Genital Secretions
14.	*Suvasam*	-	Breathing

***Suvaikal* (Six Tastes):**

Suvai can be termed as a peculiar sensation caused by the contact of soluble substances with the tongue, each suvai has two *boothams* in it.

- Sweet - *Mann + Neer*

  Its primary actions are building tissues and calm the nerves

- Sour -*Mann + Thee*

  It cleanses tissues, increases absorption of nutrients.

- Salt - *Neer + Thee*

  It improves taste to food, lubricates tissues, stimulates digestion

- Bitter - *Vayu + Aagayam*

  It detoxifies and lightens tissues.

- Pungent - *Vayu + Thee*

  It stimulates digestion and metabolism

- Astringent - *Mann + Vayu*

  It absorbs water, tightens tissues and dries fats.

***Udal agni*– 4 Body Fires**

The *agni – azhal* which is responsible for digestion and mediated through the *samanavayu* is called as *Udal agni*. It is classified into 4 types.

1. *Samaagni*
2. *Vishamaagni*
3. *Deesagni*
4. *Mandhagini*

Samaagni

When the *jadaragini* is normal with the proper balance of the three *Thathuvams* then it, is called as *samaagni*. Here the balanced diet of an individual is properly digested in time.

SIDDHA PATHOLOGY

Siddha pathology is a study of changes in the *Uyir thathukal* and *Udal thathukal* of the body in a diseased condition.

Basis of siddha pathology:

According to siddha pathology, the human body is made of *panchaboothams*. This five basic elements exists in human body as *uyir thathukkal*. It is of 3 types namely *Vali, Azhal* and *Iyam*. These 3 essential humors are formed by the combination of

Idakalai + Abanan	-	*Vali*
Pinkalai + Piranam	-	*Azhal*
Suzhumunai + Samanan	-	*Iyam*

This *uyir thathukkal* is functioning as

வாதமாய் படைத்து	-	Creation
பித்த வன்னியாய் காத்து	-	Protection
சேட்ப சீதமாய் துடைத்து	-	Destruction

Uyir thathukkal are responsible for *udal thathukkal.* These basic structures of the body system are interred linked with one another. Any alterations in this basic form result in disease.

Synonyms

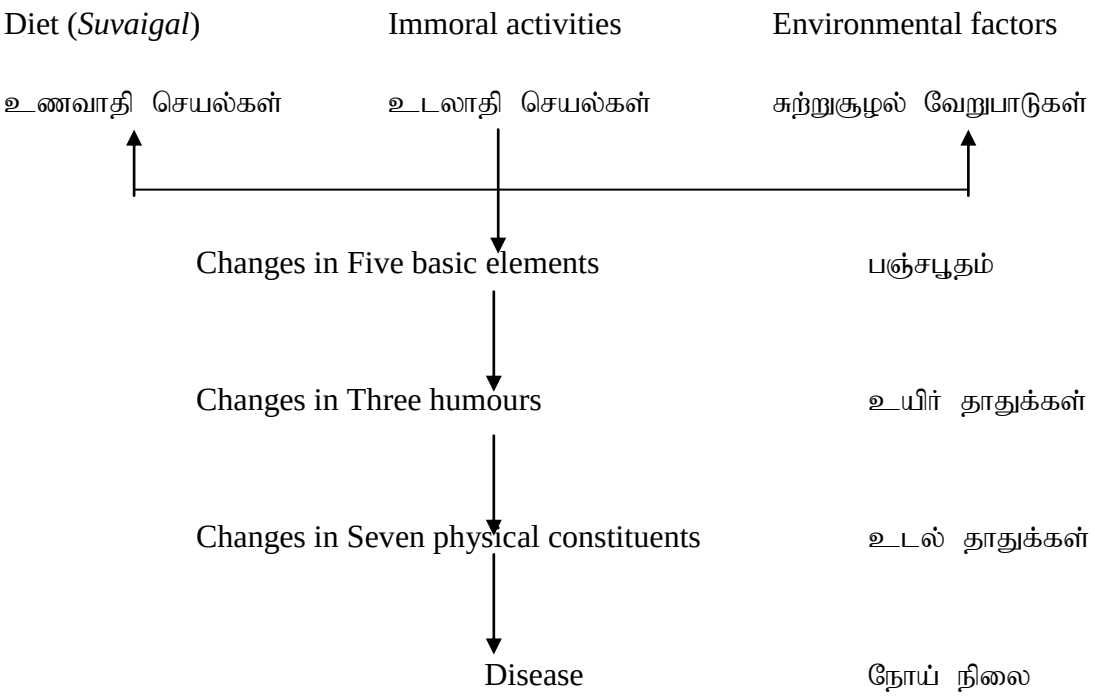
Pini, Varutham, Thunbam, Accham, Vinai, Urogam, Sugavenam, Viyathi, Asowkiyam, Thathuthoda verupadu.

According to Siddha - *Noi* (disease) is again defined as,

உணவாதி செயல்களால் உயிர் தாது, உடல் தாது ஆகியவற்றில் ஏற்படும் மாற்றங்களின் காரண, காரியமே நோய் எனப்படும்.

Various factors are responsible for occurrence of disease such as changes in dietary factors, physical activities, and environmental factors.

This is quoted in the following schematic from.



The changes in the any of the above basic structures forms the pathology of the disease

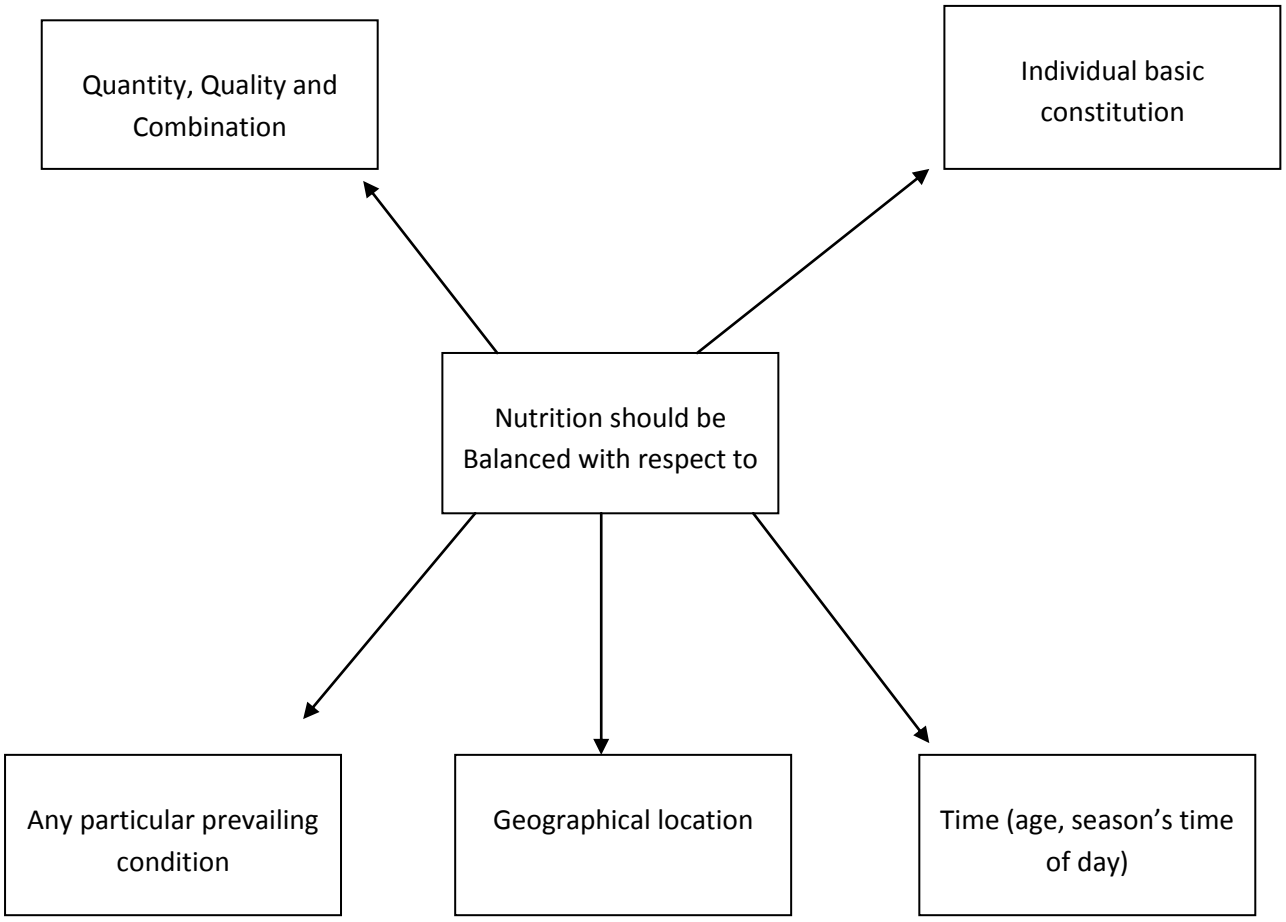
I. Variations in the intake of diet:

Any material that provides the nutritive requirements of an organism to maintain growth and physical well – being is called as food.

Food comprises six *suvaikal* in appropriate proportion. *Suvaikal* are formed by the combination of *panchapootham*, which are responsible for the *uyir thathu* and seven *udal thathukal*.

In "*Thirukkural*" the following quotations are given regarding food and food habits.

‘மாறுபா டில்லாத வுண்டி மறுத்துண்ணி
ணூறுபா டில்லை வுயிர்க்கு’



An alteration in the normal, regular diet will produce changes in the proportion of the *suvaikal* resulting in diseases.

Abnormal *Arusuvai* → Affected *Uyir thathu* → Affected *Udal thathu*→*Noi*

Excessive intake of a particular *suvai* may produce hyper activeness of the concerned *poothams* and develops some clinical manifestations.

Etiology for male infertility mentioned in Ayurveda

A pure and healthy sukkilam looks crystal clear viscid jelly like, with an odor of honey and tastes sweet. Appears like oil and honey.

During the sexual intercourse, semen gets ejaculated as a result of excitement. It is the sign of masculinity. The reason for which it is called seed will hereafter be explained by me which you may hear.

The semen which is unctuous, dense, slimy, sweet, non-irritating and white (transparent) like a crystal is to be known as pure or normal.

Infertility of polluted semen

Vitiated or polluted semen in human beings does not help in the procreation of an offspring.

Etiology of seminal pollution

- Excessive sexual indulgence
- Excessive physical exercise
- Intake of unwholesome food
- Untimely sexual intercourse
- Sexual intercourse through tracks other than the female genital organ
- Intake of food which are exceedingly ununctuous, bitter, astringent, saline, sour and hot
- Sexual intercourse with the women who are not passionate
- Old age, worry, grief and lack of confidence
- Injury by sharp instruments, alkalies and cauterization
- Suppression of the manifested natural urges
- Injury to and vitiation of tissue elements

Seminal morbidities caused by,

1. *Vayu*

It becomes frothy, thin and ununctuous. It gets ejaculated with pain and in small quantity. This type of vitiated semen does not help in conception.

2. *Pittha*

   It becomes blue or yellow in colour, excessively hot and putrid in smell. It causes burning sensation in the phallus during ejaculation.

3. *Kabham*

   If the semen obstructed by the aggravated kapha, then it becomes exceedingly slimy.

DIAGNOSTIC METHODOLOGY IN SIDDHA

Pini yari muraimai **(Diagnostic methodology)**

Pini yari muraimai means method of finding out the disease. The following three words are combined to form this world *Piniyari muraimai*

Piniyari muraimai = Pini + yari + muraimai

- *Pini* means - The disease which catch the body.
- *Yari* means - Identifying the disease.
- *Muraimai* means - Rules and methods

Since *Envagai thervugal* are having a broad and important role in diagnosing the particular disease, it is very much needed to have a thorough knowledge in it. According to siddha medical science without having knowledge in *Ennvagai thervugal*, we can't diagnose the diseases

As per siddha literature, the diagnosis is based upon three main principles

1. *Poriyalarithal*
2. *Pulanarithal*
3. *Vinaathal*

Porigal means five organs of perception. *Pulangal* means five objects of the sense organ. The application of *poriyalarithal* and *pulanalarithal* forms the fundamental step in the diagnosis of a disease

Vinaathal **- Interrogation**

It is asking questions concerned with the history of disease and its clinical symptoms etc. to the patient (or) asking to his neighbor, when the patient is not able to speak or the patient to be a child. These three principles are effected through the *Ennvagai thervugal* (Eight types of Investigation)

This methodology of diagnosis is considered as the pioneer for the present day examination methods and is a guideline for it. It was formed and presented by siddhars as a unique method.

Theraiyar mentions the *ennvagai thervugal* as follows

‘மெய்குறி நிறம் தொனி விழி நாவிருமலம் கைக்குறி’

According to the “*Noi Naadal*” the eight types of investigations are quoted as below

‘நாடி பரிசம் நாநிறம் மொழி விழி
மலம் மூத்திரமினது மருத்துவராயுதம்’

‘*Yugi Muni*’ explains the importance of *ennvagai thervugal* as follows,

‘அன்பான சாத்திரங்கள் அறிய வேண்டும்
அன்பான நாடிதனைப் பிடிக்க வேண்டும்
குன்றான மலைபோன்ற நோயெல்லாம்
குறிப்புடன் அசாத்தியமு சாத்தியமுங்கண்டு
தன்றான அட்டவித பரிட்சை கண்டு
தக்கான குணங்குறிகள் யாவுந் தேர்ந்து
வன்றான வாகடத்தின் நுணுக்கும் பார்த்து
வளமாக பிணியதனைத் தீர்ப்போர்தாமே....’

It is essential to analyze the importance and application of each of the eight types of investigations to diagnose a particular disease

***Naadi* – Pulse**

Definition: The rhythmic expansion of an artery which may be felt by the finger. In siddha it mentioned as, உடலில் உயிர் தரித்திருப்பதற்க்கு காரணமான சக்தியை தாது அல்லது நாடி என்பர்.

On the other hand, it is defined as a series of pressure waves within an artery caused by contraction of the left ventricle and corresponding with the heart rate

Naadi plays the most important role in *ennvagai thervu* and it has been considered to be the most important for assessing the prognosis and diagnosis of the disease. Any variation that occurs in the three humors is reflected in the *naadi*. These three humors organize, regularize and integrate the functions of the human body. So, *Naadi* serves as a good indicator of all ill health. *Naadi* can be perceived by feeling it at the appropriate sites. The following ten sites are mentioned in our siddha literature

Places for pulse

‘தாது முறை கேள் தனித்த குதிசந்தோடு
ஒதுறு காமியமந்தி நெடு மார்பு
காது நெடு மூக்கு கண்டம் கரம்புருவம்
போதுறு முச்சி புகழ் பத்தும் பார்த்திடே’

குதிசந்து, காமியம், உந்தி, மார்பு, காது, மூக்கு, கண்டம், கரம், புருவம், உச்சி ஆகிய பத்து இடங்களாகும்

It is felt by palpation ordinarily at all places because the arteries are placed superficially. Even though *Naadi* can be felt through ten major arteries, this will be very prominent in radial artery at the lower end of the radial bone.

Naadi is felt as

- *Vatham* - Tip of index finger
- *Pitham* - Tip of middle finger
- *Kabham* - Tip of ring finger

In normal condition, the ratio of the *naadi* is as follows

‘மெய்யளவு வாதமொன்று
மேல் பித்தம் மோரரையாம்
ஐயங்கா லென்றே அறி’

The gait of the *Naadi* c**ompared to the various animals, reptiles, birds,**

**‘வாகினிலன்னங் கோழி மயிலென நடக்கும் வாதம்
ஏகிய வாமையட்டை யிவையென நடக்கும் பித்தம்
போகியெ தவளைபாம்பு போலவாம் சேத்துமந்தான்’**

Vatham - Movement of swan and hen
Pitham - Movement of Tortoise and leech
Kabham - Movement of frog and serpent

The *Naadi* is important in siddha system in diagnosis of disease even in case of patients economic status problem, and also to avoid stress. Even in coma stage, the disease can be diagnosed through *naadi*.

***Sparisam* – Palpation**

In the examination of *sparisam* includes Temperature of skin, Warmth (or) cold, Smoothness, Dryness, Patches, abnormal growth tenderness, ulcer types can be felt out.

***Naa* - Tongue**

From ancient siddha system the tongue has been regarded as an invaluable clinical indicator of the health and disease. In the examination of tongue, temperature of skin, Warmth (or) cold, colour of the tongue, coating, dryness, increased salivation deviation and movement, variation in taste and the conditions of teeth and gums. Ulceration are also be noted.

***Niram* - Colour**

Diagnosis made with help of colour of the skin, nails, hair, conjunctiva, teeth, mucous membrane etc. The colour of the body is mentioned below

Vatham - Black
Pitham - Yellow
Kabam - White
Mukkuttra -Variety of colours

***Mozhi* - speech**

In the examination of *mozhi*, the quality of sound is assessed. Whether of nasal character, Brass or shrill, slurred, inarticulate and hoarse may be noted

***Vizhi* - Eye**

The eyes are considered as the windows of the body. Both the physiological and pathological conditions are reflected in the eyes and this helps in the diagnosis of diseases.

In the examination of eye,

- Changes of colour such as redness, yellowishness, pallor
- Dryness, lacrimation
- Sharpness of vision
- Bitot spots
- Papillary response
- Condition of eye lashes
- Inflammation may be noted

- *Thegi* Character of eye

  - *Vathathegi* - Round, horrible, rough eye with thick eyelids and pleasing look

  - *Pithathegi* - Red in heat, anger, hunger, intoxication and has hyperactive thin eyelid

  - *Kabathegi* - Beautiful, clear shiny eyes with long sightedness, the eyebrows are thick and black

***Malam* - Stools**

It is the waste material that is eliminated through the anus. It is formed in the colon and consists of a solid (or) semi solid mass of undigested food remains, bacteria and various secretions and some water

In the examination of malam its nature whether it is solid, semisolid or liquid, its colour, increased or decreased quantities are to be noted. Other findings such as diarrhoea, presence of blood (occult blood), mucous, undigested matter in the stools and odour all are to be noted

***Moothiram* - Urine**

Urine is the fluid excreted by the kidneys, which contains many of the body's waste products. In modern aspect biochemical analysis of urine is commonly used in the diagnosis of diseases and in pregnancy test

In the siddha system of medicine, examination of urine by *Neerkkuri* and neikkuri are more useful to diagnose the disease with the help of colour, smell, abnormal constituents, froth, excessive or scanty urination, mixing of blood, pus, chyle, sugar and albumin etc

Collection of urine for *Neerkkuri* and *Neikkuri*

ʻஅருந்து மாறி ரதமும் அவிரோதமாய்
அ.ˑகல் அலர்தல் அகலாவூன் தவிர்ந்தழற்
குற்றளவருந்தி உறங்கி வைகறை
ஆடிக் கலசத் தாவியே காதுபெய்
தொரு முகூர்த்தக் கலைக்குட்பட்டு நீரின்

நிறக்குறி நெய்க்குறி நிருமித்தல் கடனே’

- தேரையர்

Prior to the day of urine examination, the patient should be advised to take balanced diet and should have good rest. The very first urine of the patient is collected in a glass or a porcelain container. Though the urine should be examined only according to the rules and regulations, at times of emergency they can be relaxed which is quoted as

‘அருப்ப முற்றார்க் கவ்விதி விலக்கே’

Neerkuri

‘வந்த நீர் கரி எடை மணம் நுரை எஞ்சலென்
றைந்திய லுளவை யறைகுது முறையே’

According to above mentioned lines *Niram, Edai, Manam, Nurai* and *Enjal* are to be noted in the examination of urine

Niram

It indicates the colour of urine voided it may be yellow, red, green, black, crystal and smoky etc

Edai

It indicates the specific gravity of urine (increased or decreased quantity)

Manam

It indicates the smell of urine such as pleasant, foul smelling, honey smell, fruit smell and flesh smell etc

Nurai

It indicates the frothy nature of urine

Enjal

It indicates the inorganic and organic deposits like salts, crystals etc., and amount of urine extracted

Neikkuri

A drop of gingelly oil is dropped into wide vessel containing the urine to be tested and keep it under the sunlight. The variations of three humors in disease can be diagnosed by the behaviour of gingelly oil on the surface of urine

‘அரவென நீண்டிடின் அ.ஃதே வாதமே’

If the drop of oil spreads like a ring it indicates *pitham*

‘ஆழி போற் பரவின் அ.ஃதே பித்தம்’

The drop of oil remains floating as a pearl indicates *kabham*

‘முத்தொத்து நிற்கின் மொழிவதென்கபமே’

In *thontha* state, the oil spreads in mixed form

By the careful examination of the urine with gingelly oil, the physicians can know whether the disease is curable or not. For this purpose siddhars have explained various spreading of oil on urine surfaces

Manikkadai

To measure the wrist circumstance in finger units, the patients was asked to keep his left hand’s four fingers just below the right thumb, then the author measured the circumstance of the right wrist just below four fingers of left hand of the patients using a twine, the twine was removed from the wrist and the measurement of the twine was taken by the patients fingers. Total length of the thread was counted in terms of finger units.

Panchapatchi

‘சோதிடம் பஞ்ச பட்சி
துலங்கிய சரநூல் மார்க்கம்
கோதறு வகார வித்தை
குருமுனி ஓது பாடல்
தீதிலாக் கக்கி ஷங்கள்
செப்பிய கன்ம காண்டம்

ஈதெலாங் கற்று ணர்ந்தோர்

இவர்களே வைத்ய ராவார்’

ஒருவன் பிறக்கும் போது அவன் பட்சிக்குரிய பூதம், தொழில் முறை என்ற திறன் அடிப்படையில், அரசு, ஊண், என்ற ஆளுமை செயற்திறன் கொண்ட தொழில் செய்து கொண்டிருந்தால் அப்பூதத் தன்மை நிறைந்திருக்கும் எனக் கூறியுள்ளார். அவன் பட்சி துயில், சாவு போன்ற தொழில் திறனில் இருந்தால் அப் பட்சிக்குரிய பூதத் தன்மை அவன் உடலில் குறைவாக இருக்கும். இதை அடிப்படையாகக் கொண்ட தொகுப்பே ஐம்புள் இயக்க நூல் வழி நோய்க் கணிப்பு.

ஐம்புள் இயக்க நூல்களில் வல்லூறு, ஆந்தை, காகம், கோழி, மயில் என ஐந்து பறவைகளின் பெயர் பயன்படுத்தப் படுகின்றன. ஒவ்வொரு பறவையும் ஒரு பொழுது, ஒரு தொழில் என ஒவ்வொரு பறவையும் பகலில் ஐவகைத் தொழிலும்,இரவில் ஐவகைத் தொழிலும் செய்யும். ஒரே தொழிலை ஒரே பொழுதில் இரண்டு பறவைகள் செய்யாது. ஐவகைத் தொழிலென்பது 1) ஊண் 2)நடை 3)அரசு 4)துயில் 5)சாவு எனப் பெயரிடப்பட்டுள்ளது. இதில் தொழில் என்பது பறவையின் செயல் திறனைக் குறிக்கும்.

தொழில்	தொழில்களின் திறன்
சாவு	முற்றிலும் செயல் திறன் இழந்த, சக்தி இருந்தும் சக்தி இல்லா நிலை
துயில்	உடல் அசைவு மட்டும் உள்ள இயக்கமற்ற நிலை
நடை	சற்று உயர்ந்த நிலை. உயிர் தன்மையுடன் அசைந்து இயங்கும் தன்மை
ஊண்	நடையைவிட வலிமையுள்ள நிலை தன்னைத்தானே வலிமைப்படுத்தல்
அரசு	முழுமையான செயல் திறனை பெற்ற வலுவான இயங்கு நிலை.

பறவைகளின் தொழில் திறனைக் கணிக்க வேண்டும்

வளர்பிறை

வளர்பிறை

தேய்பிறை

ஞா செ	திங் சனி	புத ●	வியா	வெள் வருவையும் பருப்பாகவும்	காற்று	நிலம்	நீர்	ஆகாயம்	தீ
1	3	4ப இ5	2ப இ4	5ப இ2	ஊ ந	ந ஊ	சா அ	து து	அ சா
2	4	5ப இ1	3ப இ5	1 ப இ3	சா சா	ஊ து	து ஊ	அ ந	ந அ
3	5	1 ப இ2	4ப இ1	2ப இ4	து அ	சா ந	அ து	ந சா	ஊ ஊ
4	1	2ப இ3	5ப இ2	3ப இ5	அ ஊ	து சா	ந ந	ஊ அ	சா து
5	2	3ப இ4	1 ப இ3	4ப இ1	ந து	அ அ	ஊ சா	சா ஊ	து ந

அதன்படி

அவன் பிறந்த நேரத்தில் பறவைகளின் தொழில் திறன் : வல்லூறு - ஊண் , ஆந்தை - நடை : காகம் - அரசு: கோழி - துயில்: மயில் - சாவு

வளர்பிறையில் பறவைகளுக்கான பருப்பொருளைக் கணிக்க வேண்டும். அதன்படி அவன் பிறந்த நேரத்தில் பறவைகளின் தொழில்திறனும், அவற்றின் பருப்பொருள்களும்

பறவைகள்	தொழில் திறன்	பருப்பொருள்இயல்பு
வல்லூறு	ஊண்	நெருப்புபூதம்
ஆந்தை	நடை	காற்றுபூதம்
காகம்	அரசு	மண்பூதம்
கோழி	துயில்	நீர்பூதம்

மயில்	சாவு	ஆகாயப்பூதம்

இது அவன் பிறக்கும் போதுள்ள ஐந்து பூதங்களின் இயல்பு நிலை. இது தொடர்ந்து அதன் இயல்பு நிலையிலே இருத்தல் வேண்டும் என்பது இயற்கை நியதி.

நமது உடலில் வளர்பிறையில் குறைந்த செயல் திறனுள்ள பூதங்களின் ஆளுமை இடங்களைக் கணிக்கவேண்டும்

பறவைகள்	ஆளுமை இடங்கள்
வல்லூறு	கழுத்து,பிறவியுறுப்பிற்குமேல், வயிற்றுக்கும் இடைப்பட்ட பகுதி
ஆந்தை	வாய், கீழ்வயிறு, கெண்டைக்கால்
காகம்	மூக்கு, வயிறு
கோழி	நெற்றி, மார்பு
மயில்	கூந்தல்,தோள்,பிறவியுறுப்பும் அதன் இடமும்

நோய்கள் முதலில் ஆதாரங்களை பாதிப்படையச் செய்து பின்பு நாடிகளைப் பாதிப்படையச் செய்கிறது, இதைத் தொடர்ந்து மத்திய நரம்புமண்டலங்களும், நாளமில்லா சுரப்பிகளும் பாதிப்படைகின்றன.

- மூல மண்டலம் (மூலாதாரம்) - ஐந்து பருப்பொருள் இருப்பிடம்
- கொப்பூழ் மண்டலம் (சுவாதிட்டானம்)- மண்பூத ஆளுமை வீடு
- மேல்வயிற்றுமண்டலம் (மணிப்பூரகம்) - நீர்பூத ஆளுமை வீடு
- நெஞ்சகமண்டலம் (அனாதகம்) - நெருப்பு பூத ஆளுமை வீடு

-மிடறுமண்டலம் (விசுத்தி)- காற்றுப்பூத ஆளுமை வீடு
- புருவநடுமண்டலம் (ஆக்கினை) - ஆகாயப்பூத ஆளுமை வீடு

மண்டலம்	பூதம்	ஆளுமை பாதிக்கப்பட்டால் வரும் நோய்கள்
கொப்பூழ்	மண்பூதம்	ஆண்மைக்குறைவு, இனப்பெருக்க கழிவு நீக்கு மண்டலம்
மேல்வயிறு	நீர்பூதம்	இரைப்பை,சீரணமண்டலம், மதுமேகம், குடல்புண்
நெஞ்சகம்	தீபூதம்	இரைப்பிருமல்,நுரையீரல், இதயநோய்,அதிகுருதிஅழுத்தநோய்
மிடறு	காற்றுபூம்	தொண்டைநோய், கழுத்திறுக்கம்,நீர்கோர்வை,செவித்திறன்குறைபாடு
புருவநடு	ஆகாயபூதம்	கண்பார்வை,களைப்புநோய்கள்,தலைவலி,பயமுறுத்தும் கனவு

கணிப்பில் முதலாம் நிலை விதி I-ன்படி- அவன் நட்சத்திரம் உத்திராடம் , அது வளர்பிறை என்பதால்–கோழி

விதி II-ன்படி- அவன் பிறப்பு காலை 6.30 என்பதால் அது பகல் முதல் பொழுதாகும்

விதி III-ன்படி- அவன் பிறந்த நேரத்தில் பறவை செயல்திறன் கணிக்க வேண்டும்.

அவன் பறவை கோழியின் செயல்திறன் - துயில் ; வல்லூறு- ஊண்; ஆந்தை-நடை; காகம் - அரசு ; மயில் - சாவு

விதி IV-ன்படி -அவன் பிறந்த நேரத்தில் பறவைகளின் பூத இயல்பு நிலை

பறவைகள்	பருப்பொருள்இயல்பு

வல்லூறு	நெருப்புபூதம்
ஆந்தை	காற்றுபூதம்
காகம்	மண்பூதம்
கோழி	நீர்பூதம்
மயில்	ஆகாயப்பூதம்

விதி V-ன் படி- குறைந்த செயல்திறனுள்ள பறவைகள் கோழி- நீர் பூதம், மயில் -விசும்பு பூதம். இவை முறையே நீர் பூதம் நெற்றி, மார்பு ஆகிய இடங்களிலும், விசும்பு பூதம் கூந்தல், தோள், குறிகளும் அவைகள் அமைந்த இடங்களும்.

விதி VI-ன் படி- பாதிக்கப்பட்ட மண்டலம்
மேல் வயிற்று மண்டலம் (மணிப்பூரகம்)
புருவ நடு மண்டலம் (ஆக்கினை)

கணிப்பில் இரண்டாம் நிலை

முன்னர் கூறியது போல ஐந்து தொழில் முறைகளில் குறைந்த செயற்திறன் உடைய பருப்பொருள் இயல்புகள் அதனை வழி நடத்தும் குணமாகத் திகழ்கின்றன. எனவே ஐந்து தொழில் முறைகளிலும் சாவு, துயில் என்ற இரண்டையும் எடுத்துக் கொள்ள வேண்டும்.

அதன்படி
மயில் - ஆகாய பூதம் - சாவு
கோழி - நீர் பூதம் - துயில்
குறிப்பு ; ஐம்புள் இயக்க நூல் வழி நோய் கணிக்க தத்துவம்

தொண்ணூற்றாறு,அதில் உடல் தத்துவம் இருபத்தைந்தையும், ஐம்பெரும் பருப்பொருள் சேர்க்கையான பஞ்சீபகரணம், சூக்கும பஞ்சீபகரணம் ஆகியவற்றையும் தெரிந்து கொள்ள வேண்டும். அதுவே அடிப்படை கணிப்பில் மூன்றாம் நிலை .

பஞ்சீகரண விதியின்படி,
ஆகாயம் + நீர் = சுக்கிலம்

சூக்கும பஞ்சீகரண விதிப்படி

ஆகாயம் + நீர் = மூக்கு
தசவாயுவில் முதன்மை காற்று
காற்று + நீர் = உயிர்க் காற்று (பிராணன்)

தசவாயுவில் துணைக் காற்று
காற்று + நீர் = தும்மல் காற்று

உடல் தத்துவம் இருபத்தைந்தில் புலன்கள் ஐந்தில்

நீர் + ஆகாயம் = ஓசை (காதின் கேட்கும் திறன்)
தசநாடியில் = கருவாய் நரம்பு (சிங்குனி)

ஆண்,பெண் இனப்பெருக்க உறுப்புமலவாய் நரம்பு (குகு) கப வாத நாடி – நீர்மலவாய் அழற்சி ,முகம் வியர்த்தல் வலதுகண் நரம்பு (புருடன்) கபத்தில் கபம் விழி குளிர்தல் மண்டல ஆளுமை பாதிக்கப்படும் போது மேல் வயிற்று மண்டலம் (மணிப்பூரகம்) இரைப்பை, சீரணமண்டலம், குடல்புண் புருவ நடு மண்டலம் (ஆக்கினை) கண் பார்வை, களைப்பு நோய்கள், தலைவலி, பயமுறுத்தும் கனவு வரும் .

கணிப்பில் நான்காம் நிலை
நமக்கு கொடுக்கப்பட்ட நோயாளியின் பிறந்த நேரப்படி, வறட்டு இருமலுடன் கணச்சூடு, மலக்கட்டு, விந்து முந்துதல், மூச்சிரைப்பு, மூக்கில் புண் இருக்கும்.அடிப்படையில் நீர்ப் பூதம் தன்னிலையில் குறையும் போது அங்கே தன்னிச்சையாக தீ அளவு மற்றும் வன்மை அதிகரிக்கும்

Analysis method of *Panchapatchi*

வளர்பிறை வியாழன்

1	3	1	2	4	2	5	3	6	4	7	5

பறவை	1ம் பொழுது	2ம் பொழுது	3ம் பொழுது	4ம் பொழுது	5ம் பொழுது
காகம்	ஊண்	நடை	அரசு	துயில்	சாவு
கோழி	நடை	அரசு	துயில்	சாவு	ஊண்
மயில்	அரசு	துயில்	சாவு	ஊண்	நடை
வல்லூறு	துயில்	சாவு	ஊண்	நடை	அரசு
ஆந்தை	சாவு	ஊண்	நடை	அரசு	துயில்

2ம் பொழுது

காகம்	நடை
கோழி	அரசு
மயில்	துயில்
வல்லூறு	சாவு
ஆந்தை	ஊண்

வல்லூறு - சாவு – தீ ;மயில் - துயில் – ஆகாயம்

1	3	4	2	7	5	4	3	5	2	6	1

பறவை	1ம் பொழுது	2ம் பொழுது	3ம் பொழுது	4ம் பொழுது	5ம் பொழுது
கோழி	ஊண்	அரசு	சாவு	நடை	துயில்
காகம்	அரசு	சாவு	நடை	துயில்	ஊண்
ஆந்தை	சாவு	நடை	துயில்	ஊண்	அரசு
வல்லூறு	நடை	துயில்	ஊண்	அரசு	சாவு
மயில்	துயில்	ஊண்	அரசு	சாவு	நடை

MODERN ASPECTS – OUTLINE OF BASIC ANATOMY

Testis

The testis is the primary male sex gland. An adult human testis weighs between 30 to 45 gm. A careful examination of the testes is an essential part of any andrological examination. Normal adult testis is approximately 4.5 cm long and 2.5 cm wide with a mean volume of about 20 cc or ml. If its internal structures such as seminiferous tubules are damaged before puberty, the testes are small and firm; but with postpubertal damage, they are usually small and soft.

A sac derived from the peritoneum acquired during its descent during foetal development covers each testis. This sac or tunica vaginalis has an outer parietal and an inner visceral layers. A thick capsule of collagenous connective tissue called tunica albuginia surrounds each testis under the visceral layer of the tunica vaginalis.

Microscopically, the testis is composed of up to 900-coiled seminiferous tubules (up to 60 cm long and 0.2 mm in diameter) in which the sperms or spermatozoa are formed. These tubules lead to the epididymis. The glandular part of the adult testis is composed of 200 to 300 lobules, each containing two or three coiled seminiferous tubules, which are joined together at the pieces of lobules to form 20 to 30 straight tubules anastomosing with one another through a mesh work of ducts called rete testis. From the rete testis, 12 to 20 efferent highly coiled ductules emerge to form the head of the epididymis.

The epididymis is located posterolateral to the testis and appears like a drape over the top of the testis. It has three anatomical parts caput or head, corpus or body and the cauda or tail. The tail leads to the vas deferens. The epididymis consists of a narrow tightly coiled-up tube and these coils, when stretched out measure approximately 20 feet (6-7 meters) in length. The name epididymis is the Greek for ‘upon the twins’.

Human epididymis is 4 to 5 cm long and is attached to the testis through epididymal ligaments. The vasal ligament attaches the vas to the tail of epididymis and maintains the acute epididymal-vasal angle. Anomalies of epididymis include appendix epididymis, superior and inferior aberrant ducts and paradidymis. Failed congenital connections between individual efferent ducts and the epididymis may lead to the formation of simple cysts of the head of the epididymis

The vas deferens is a muscular duct 30 to 35 cm (15 inches), long and enlarges into the ampulla, immediately before it enters into the substance of the prostate gland. Latter is considered as the secondary male sexual gland. A seminal vesicle, each located on each side and above the prostate gland, empties into the prostatic end of the ampulla. The contents of both the ampulla and the ducts of the seminal vesicles from each side join to form the ejaculatory ducts passing through the body of the prostate to empty into the urethra. The prostatic ducts in turn empty into the ejaculatory ducts. Finally, the urethra drains the semen to the exterior.

Numerous mucous glands line the urethra. There are two relatively big ones known as bulbourethral or Cowper's glands situated just below the prostatic portion of the urethra. In patients with a genetic defect causing cystic fibrosis, the vas deferens or epididymis and seminal vesicles are usually absent. The persistence of efferent ducts, but absence of epididymis proper and vas in cystic fibrosis, reflects different embryological origins of the epididymis, vas and efferent ductules. The epididymis and vas develop from the wolffian or mesonephric ducts and the efferent ductules from the mesonephric tubules.

Development of Testis and Male Reproductive System

The testis develops from the developing mesonephros at the posterior part of the coelome at the level of TJO segment. This explains the autonomic supply of the testis from the corresponding spinal segment. The mesonephros plays a fundamental role in the process of gonad formation. The nephrotome, a stalk of the somites, is the precursor of mesonephros. The blaste-mal somatic cells that originate from differentiation of the mesonephros contribute to the formation of the genital ridge. The testis develops from the medulla of bipotential human gonad.

Differentiation of the primitive bipotential gonadal ridge into primitive testis is mediated by various factors. SRY gene *(sex - determining region - Y)* diverts the ovarian (female) to the testicular (male) pathway. It alters the fates of different cell types to three gonad-specific lines—the supporting cell, steroid cells (Sertoli and Ley dig) and germ cells together with vascularised connective tissues. Role of *testis-determining factor* (TDF) has been debated for years and in 1987 a gene named ZFY *(zinc finger protein-Y)* was identified, and it was encoded by a gene from the TDF region on the Y-chromosome. It appeared that ZFY expression correlated with the colonisation of the testis by primordial

germ cells. In 1990, SRY gene was isolated. It is expressed in the genital ridge where testicular cords originate types to three gonad-specific lines—the supporting cell, steroid cells (Sertoli and Ley dig) and germ cells together with vascularised connective tissues. Role of *testis-determining factor* (TDF) has been debated for years and in 1987 a gene named ZFY *(zinc finger protein-Y)* was identified, and it was encoded by a gene from the TDF region on the Y-chromosome. It appeared that ZFY expression correlated with the colonisation of the testis by primordial germ cells. In 1990, SRY gene was isolated. It is expressed in the genital ridge where testicular cords originate.

Primitive gonad is bipotential till the 6^{th} week of the intrauterine life (IUL). TDF and mullerian inhibitory substance (MIS) then determine its subsequent fate around the $7t^{h}$ week. At this stage the TDL helps the primitive gonad to differentiate into the primitive testis, which gets transformed into foetal or primitive germ, sertoli and leydig cell then starts secreting the androgen which further consolidates the development of foetal testis.

The male reproductive system develops from three embryological sources. The primitive gonad forms the testes, while the urogenital duct (Wolffian duct in male) and the urogenital sinus (primitive cloaca) contribute to other two components. Both the Wolffian and the Mullerian ducts coexist in the early embryonic life in both sexes. Mullerian ducts disappear in male, but some of its remnants can be traced to the prostatic utricle. The epididymis, vas and the seminal vesicle owe its origin to the Wolffian duct. The prostate and the prostatic urethra develop from the urogenital sinus. The urogenital swellings become the scrotum and the urethral folds fuse to form the shaft of the penis and the rest of the male urethra.

Testosterone along with dihydrotestosterone (DHT) from the foetal testes stimulates the development of male genital organs like the male urethra, prostate, penis and the scrotum in the IUL. Foetal testicular secretion attains its peak level around 8th to 10th week and the formation of the male phenotype is mostly completed by the end of the first trimester of gestation. Later, in the IUL further development of testes and the external genitalia, and the descent of the testes complete the full process of embryonic development.

Developmental sources of male reproductive system

Source	Organ
Primitive gonad	Testes
Mesonephros and Woiffian duct	Epididymis, vas and seminal vesicles
Urogential sinus	Prostate and the prostatic urethra
Urogenital swellings	Scrotum
Urethral folds	Shaft of the penis and rest of the urethra
Genital tubercle	Glans Penis

Vascular Supply of Testis

Arterial Supply

The arterial supplies to the testis and epididymis come from the internal spermatic or testicular artery arising out of the abdominal aorta. Vasal artery maintains a dual supply to the vas and the epididymis through its anastomosis with the testicular artery. This additional supply of the epididymis ensures higher concentration of androgen in the epididymis, perhaps to facilitate maturation of sperms.

Venous Drainage

Venous drainage is provided by the spermatic veins and has been described in details on varicocele The spermatic vein passes along the vas in a very tortuous course as the pampiniform *(like a vine)* venous plexus, which wraps round and surrounds the spermatic artery in a convoluted manner.

This anatomical feature facilitates the countercurrent heat and androgen exchanges between the arterial and venous systems. The testes are suspended outside the body in the scrotal sac. Contraction and relaxation of the cremasteric muscle alter the distance of the testis and the body (which has a higher temperature) depending on the environmental temperature, thus maintaining the gradient of approximately of 2°C between the body and the testis for optimal spermatogenesis. Dilatation of the component veins of the pampiniform venous plexus leads to varicocele, which often causes impaired spermatogenesis. Injury to the testicular blood supply can occur in a hernia operation or even during vasectomy.

Microscopic anatomy of testis

Basically, the testicular histology shows seminiferous tubules and interstitial tissues. Germ cells (also known as stem cell or primitive spermatogonia) and Sertoli cells constitute the seminiferous epithelium. The interstitial tissue occupies approximately one-fourth to one-third of the total testicular volume and contains the Leydig cells, blood vessels, lymphatics and nerves. In addition, there are collagen fibres, myoid and elastic tissues and a large number of macrophages. Blood supply to the testis passes through the interstitial tissues. As stated earlier, the epididymis has a dual supply from both the testicular and the vasal arteries

Sertoli Cells

Sertoli cells provide the physical support for the germ cells and are considered to be primary regulator of spermatogenesis. After puberty, the Sertoli cells are a fixed-population of non-dividing cells with its base attached to the basement membrane of the tubule and the apex extending towards the lumen. They surround all germ cells except the stem cells *(spermatogonia)* and its immediate successor cells or *primary spermatocytes* and luteinizing hormone (LH) levels are normal, but FSH levels are usually elevated. Sometimes in patients, who had other testicular disorders such as mumps, cryptorchidism or radiation / toxin-related damage, the seminiferous tubules may also contain only Sertoli cells; but in these men, the testes are small and the histological pattern is not so uniform. These patients are more likely to have severe sclerosis and hyalinization as prominent features.

Leydig Cells

Leydig cells have a biphasic pattern of development and are of foetal and adult types. The foetal type cells proliferate between the 8^{th} and 18^{th} week of the IUL. Later, they start regressing slowly and undergo complete attrition in the first few weeks of neonates. The adult type starts replacing the foetal type at about the third week of neonatal life and usually by the 8^{th} week, a definitive level is reached. Adult Leydig cells most probably have origin from a mesenchymal fibroblast like cells, macrophages, and peritubular myoid cells After puberty, the numbers of Leydig and Sertoli cells do not increase any further. Consequently, the turn over of these cells in contrast with the germ cells is very low.

Spermatogenesis

Spermatogenesis is a complex process, whereby primitive stem cells or spermatogonia

either divide to renew and replenish the stem cell, or produce daughter cells that will later become spermatozoa. At birth, the Sertoli cells are numerous with ill-defined cytoplasmic boundaries. With the advent of puberty, the positions of the Sertoli cells, which are present normally in two or three layers, change from the earlier position along the outer border of the tubular epithelium towards the developing lumen of the seminiferous tubule near the basement membrane. This is achieved by the extension of the cytoplasmic process of the Sertoli cell. This pre-pubertal movement of the Sertoli cell to its adult position is very important in achieving the *blood-testis barrier*. The seminiferous tubules also start their development at puberty.

1. ***Type*** A—that is thought to be precursor, divides four (4) times (A1 to A4) and then through another intermediate phase (IV) by *mitosis* to produce sixteen (16)

2. ***Type B***spermatogonia. ***Type B*** migrates towards the Sertoli cells and then divides to produce primary spermatocytes through the *first meiotic division.* In the initial stage of this division, 46 chromosomes are replicated. In this process, each of these 46 chromosomes acquires two *chromatids* that remain bound together at the centromeres having duplicate genes of the particular chromosome. It then goes through another division to produce two secondary spermatocytes, but each pair of chromosomes now separates into two halves, so that 23 chromosomes each containing two chromatids go to one secondary spermatocyte; while other 23 chromosomes go to the other secondary spermatocyte. Secondary spermatocytes then go through the *second meiotic division* within 2 to 3 days to develop into spermatids with haploid number of 23 chromosomes (half of the original number of 46 chromosomes). So each primary spermatocyte with forty-six chromosomes produces four spermatids (immature sperms) each containing twenty-three chromosomes, but having only half the genes (haploid number) of the original spermatogonia. 3. The third phase *(spermiogenesis)* is the development of spermatids to spermatozoa. During this process of development, the shape of the nucleus of spermatid changes from round to oval and the light granulated chromatin goes through a process of condensation. Accordingly, the spermatids are classified into four successive types ***Sa, Sb, Sc*** and ***Sd.*** The last group of *Sd* spermatids undergoes a transformation into spermatozoa. It thus appears that from one germ cell, 512 spermatozoa develop. In the process of its transformation into spermatozoa, the spermatid undergoes nuclear condensation, acrosome formation and loss of most of its cytoplasm. It also develops a tail and the mitochondria get arranged in the middle piece of the sperm. Due to incomplete

cytokinesis, all cells derived from a single spermatogonia are connec-ted through cytoplasmic bridges and this is replicated till a spermatid is developed.

Spermatogenesis occurs in all the seminiferous tubules during active sexual life, beginning at an average age of 12 years as a result of stimulation by the pituitary gonadotrophin hormones. It continues throughout the remainder of life. Interestingly, the successors of spermatogonia do penetrate the blood-testis barrier; otherwise, they cannot come to the lumen and become totally enveloped within the enfolding cytoplasmic processes of the Sertoli cells. This close relation with the Sertoli cells continues throughout the life.

Groups of germ cells tend to develop and pass through spermatogenesis together. This sequence of developing germ cells is called a generation. Each generation of germ cells is basically in the same stage of development. There are six stages of its development, and progression from stage one through stage six constitutes one cycle. In humans, the duration of each cycle is approximately 16 days and 4.6 cycles are required for a mature sperm to develop from an early spermatogonia. Thus, the duration of the entire human spermatogenic cycle is calculated as 74 days (4.6 cycle of 16 days each equals 74 days).

Structure of a sperm

The structure of a matured sperm consists of a head and tail joined by the middle piece. A narrow portion or neck lies between the latter and the head. Essentially, the head is the condensed nucleus with a very thin cell membrane covering its surface. But its anterior two thirds has a cap known as the *acrosome.* It contains the hyaluronidase capable of digesting proteoglycan filaments of tissues, and powerful proteolytic enzymes. The tail or the flagellum has a central skeleton with 11 microtubules called axoneme (very much similar to cilia), a very thin cell membrane and collection of mitochondria surrounding the axoneme in the proximal portion or the body of the tail

An oocyte is surrounded by three layers-*cumulus oophorus* and *corona radiata* consisting of follicular cells, and the *zona pellucida*, rich in glycoproteins. The perivitelline space is located between the zona pellucida and the oocyte membrane

Sperms seem to utilise two mechanisms to penetrate oocytes - firstly, through its lytic

enzymes in the anterior head portion, especially within the acrosome; and secondly, through its movement of the tail. Creatinine phosphokinase present in the midpiece of sperm allows the phosphorylation of creatinine and its subsequent transfer to the contractile element of the tail for its motion. Thus, all three segments of the sperms play important roles for their movement and subsequent penetration of the ovum

Role of Epididymis

Animal studies have shown that the sperm maturation and the storage are major functions of epididymis. Compared to other species, the storage capacity of the human epididymis is limited and this is reflected by the low sperm content of the epididymis. The sperm contents of the ejaculate depend on the number of sperms in the epididymal tail and the proximal portion of the vas at the time of ejaculation. It also depends on the daily sperm production and the frequency of ejaculations. When emptied by multiple ejaculations, healthy human epididymis can replenish the stock over a two-week period.

During this period, the sperms acquire properties to progress forward to undergo capacitation, to attach and to penetrate the zona pellucida of the ovum. Various specific proteins from the secretions from epididymal epithelium, which bind the sperm and remain in the ejaculate, help to induct the acrosome reactions. It thus facilitates to penetrate zona during the fertilisation. Lower molecular weight components such as *carnitine.*Often, the erectile dysfunctioned or impotence is excluded notwithstanding that it should also be in the second category.

Any scientific research should aim at a systematic approach to find out the most effective therapy for any diseased condition. Consequently, the first step to achieve this goal would be to classify the etiological factors, so that the process of diagnosis and treatment can be streamlined. Many investigators and researchers have put forward their own classifications, but most of their methodology centres round the semen analysis—admittedly the singularly important investigation in male infertility. Others have preferred to enumerate them with a simple classification as pretesticular, testicular and post-testicular causes.

MODERN PHYSIOLOGY

Functions of testis

A. The gametogenic function

B. Endocrine function

Gametogenic functions of testis- spermatogenesis

The production of gamete cells is called the gametogenic function. spermatogenesis is the process by which spermatozoa are developed from the primitive germ cells in the testis known as spermatogonia. Spermatogenesis occurs in four stages

1. Stage of proliferation
2. Stage of growth
3. Stage of maturation and
4. Stage of transformation

Stage of Proliferation

The spermatogonia near the basement membrane of seminiferous tubule are larger. Each one contains diploid number of chromosomes (23 pairs in man). One member of each pair is from maternal origin and the other from paternal origin

During the proliferative stage, the spermatogonia divide by mitosis without any change in chromosomal number. In man, there are usually seven generations of spermatogonia. The last generation enters the stage of growth as primary spermatocyte

Stage of Growth

The primary spermatocyte grows into the large cells. Apart from this, there is no other change in this stage

Stage of Maturation

The spermatids do not divide further but transform into spermatozoa by a process called spermeogenesis

Regulation of spermatogenesis

Spermatogenesis is regulated by Sertoli cells and some hormones. It is also influenced by various other factors

Sertoli cells influence spermatogenesis by three ways.These cells secretes estrogen, which is essential for spermeogenesis. Sertoli cells secrete hormone binding proteins. These proteins bind with testosterone and estrogen and carry the hormones into the fluid of seminiferous tubules. Thus, Sertoli cells make these hormones available for the maturation of sperms.

Role of Hormones

The hormones, which are necessary for spermatogenesis

- Testosterone
- Follicle stimulating hormone (FSH)
- Luteinizing hormone (LH)
- Estrogen
- Growth hormone

Stimulates the process of spermatogenesis. It is also necessary for the formation of secondary spermatocyte from primary spermatocyte

In addition to testosterone, FSH is also necessary for stimulation of the process of spermeogenesis. This hormone is essential for the secretion of testosterone from Leydig cells. Estrogen - This is secreted by Sertoli cells. This is also necessary for spermeogenesis.

Increase in the temperature prevents spermatogenesis. Normally, the temperature in the scrotum is about 2°C less than the body temperature. This low temperature in scrotum is essential for spermatogenesis. When the temperature increases, the sper¬matogenesis stops. This is very common in cryptorchidism (undescended testes). In cryptorchidism, the testes are in the abdomen where the temperature is always higher than that of scrotum. This temperature causes degeneration of seminiferous tubules and spermatogenesis does not occur.

- **Endocrine function of testis**

Male sex hormones are called the androgens. Testis secretes three androgens

- Testosterone

- Dihydrotestosterone
- Androstenedione

Testosterone is secreted in large quantities. However, dihydrotestosterone is more active.

Source of Secretion

The androgens are secreted in large quantities by testes and, by adrenal cortex in small quantities.

In testes, the hormones are secreted by the interstitial cells of Leydig. These cells form 20% of mass of adult testis. Leydig cells are numerous in newborn male infant and in adult male after puberty. But in childhood, these cells are scanty or non-existing. So, the androgens are secreted in newborn babies and after puberty.

Zona reticularis of adrenal cortex also secretes androgens called testosterone, androstenedione and dehydro- epiandrosterone. The actions of all the three adrenal androgens are insignificant under normal physiological conditions because of their small quantity. In abnormal conditions, the excessive secretion of adrenal androgens plays an important role in development of sexual disorders.

Chemistry

Androgens are steroid hormones synthesized from cholesterol. Androgens are also synthesized directly from acetate. Testosterone is a C_{19} steroid

- **Functions of testosterone**

In general, testosterone is responsible for the distinguishing characters of masculine body. In the fetal life, the testes are stimulated by human chorionic gonadotropins secreted by placenta. But, in childhood, practically no testosterone is secreted approximately until 10 to 12 years of age. Afterwards, the testosterone secretion starts and, it increases rapidly at the onset of puberty and lasts throughout most of the remaining part of life. The secretion starts decreasing after 40 years and becomes almost zero by the age of 80 years

- **Functions of testosterone in fetal life**

The fetal testes begin to secrete the testosterone at about 2^{nd} to 4^{th} month of embryonic life.

Testosterone performs three functions in fetus

- Sex differentiation in fetus

- Development of accessory sex organs and
- Descent of the testes

1. Sex differentiation in fetus

In fetus, there are two genital ducts called, Mullerian duct and Wolffian duct. This duct gives rise to female accessory sex organs such as vagina, uterus and fallopian tube and Wolffian Duct. This gives rise to male accessory sex organs such as epididymis, vas deferens and seminal vesicles.

If testosterone is secreted from the genital ridge of the fetus at about 7th week of intrauterine life, the Mullerian duct system disappears and male sex organs develop from Wolffian duct. In the absence of testosterone, female sex organs develop from Mullerian duct. Thus, testosterone is responsible for the sex differentiation of fetus

2. Development of Secondary Sex Organs

Testosterone is also essential for the growth of the external genitalia - penis and scrotum and other accessory sex organs - genital ducts, seminal vesicles and prostate

3. Descent of Testes

Initially, testes are developed in the abdominal cavity and are pushed into the scrotum through inguinal canal just before birth. The process by which testes enter the scrotum is called the descent of testes. Testosterone is necessary for this. If a male child is born with undescended testes, the condition is called cryptorchidism. Administration of testosterone or gonadotropic hormones (which stimulate Leydig cells) can cause the testes to descend, if the inguinal canal is large enough to allow the passage of testes.

- **Functions of testosterone in adult life**

Testosterone has two important functions in adult.

Effect on sex organs and effect on secondary sexual characters

1. Effect on Sex Organs

After puberty, the testosterone secretion causes increase in the size of penis, scrotum and the testes. All these organs are enlarged at least 8 folds before the age of 20 years, under the influence of testosterone

2. Effect on Secondary Sexual Characters

Testosterone causes development of secondary sexual characters at puberty, which distinguish the male from female. The secondary sexual characters developed by testosterone are:

- Muscular Growth

One of the most important male sexual characters is the development of musculature after puberty. There is an increase of about 50% of muscle mass. This is due to the anabolic activity of testosterone on proteins. It accelerates transport of amino acids into the muscle cells, synthesis of proteins and storage of proteins

- Bone Growth

After puberty, the bones grow in thickness, which is associated with deposition of calcium. The increase in thickness is due to increase in total content of bone matrix. The increase in bone matrix is due to the protein anabolic activity of testosterone and, the deposition of calcium is secondary to the increased bone matrix

Testosterone causes broadening of shoulders and, it has a specific effect on pelvis, which results in

- Narrowing of pelvic outlet
- Lengthening of pelvis and
- The funnel like shape

Thus, pelvis in males is different from that of females, which is broad and ovoid shaped

In addition to increase in the size and strength of the bones, testosterone also causes early fusion of epiphyses of long bones with shaft. So, if testes are removed before puberty, the height of the person is increased.

- Changes in Skin

- Testosterone increases the thickness of skin over the entire body surface and the ruggedness of subcutaneous tissue. These changes in skin are due to deposition of proteins in skin. It also increases the quantity of melanin pigment, which is responsible for the deepening of the skin

colour.

- Testosterone enhances the secretory activity of sebaceous glands. So, at the time of puberty, when the body is exposed to sudden increase in testosterone secretion, the excessive secretion of sebum leads to development of acne on the face. After few years, the skin gets adapted to testosterone secretion and, the acne disappears

- Hair Distribution

The testosterone causes male type of distribution of hair on the body, i.e. hair growth over the pubis, along linea alba up to umbilicus, on face, on chest and other parts of the body like back. In males, the pubic hair has the base of the triangle downwards

Testosterone decreases the hair growth on the head and may cause baldness if there is genetic background

- Change in Voice

At puberty, testosterone causes hypertrophy of laryngeal muscles, the enlargement of larynx and lengthening and thickening of vocal cords. This produces a cracking voice at the time of adolescence. Later, it Is gradually changed into a typical adult male voice with a bossing sound

- Effect on Basal Metabolic Rate

At the time of adolescence and earlier part of adult life, the testosterone increases the basal metabolic rate to about 5 to 10%. This is mostly due to the anabolic effects of testosterone on protein metabolism

- Effect on Electrolyte and Water Balance

Testosterone increases the retention of sodium by reabsorption in renal tubules. This action is very mild. However, it increases the volume of extracellular fluid and blood after puberty

- Effect on Blood

After puberty, testosterone causes mild increase in blood volume by increasing the water content and by increasing the number of red blood cells

Mode of action of testosterone

- Testosterone is converted into dihydrotestosterone in the target cells of accessory sex organs - prostate, seminal vesicles, epididymis, and penis and other organs. In brain, it is converted into estrogen (estradiol)

- The dihydrotestosterone combines with receptor proteins. The hormone receptor complex migrates to nucleus, binds with a nuclear protein and induces the DNA-RNA transcription process. In 30 minutes, the RNA polymer is activated and the concentration of RNA is increased in cellular protein. The quantity of DNA is also increased.

- So, the testosterone primarily stimulates the protein synthesis in the target organs or cells, which are responsiblejor the development of secondary sexual characters.

Regulation of testosterone secretion

During fetal life, the testosterone secretion from testis is stimulated by human chorionic gonadotropin, which has the properties similar to those of luteinizing hormone. Human chorionic gonadotropin stimulates the development of Leydig cells in the testis of fetus and promotes testosterone secretion

In AdultsLuteinizing hormone (LH) or interstitial cell stimulating hormone (ICSH) stimulates the Leydig cells and the quantity of testosterone secreted is directly proportional' to the amount of LH available.

Secretion of LH from anterior pituitary gland is stimulated by luteinizing hormone releasing hormone (LHRH Testosterone regulates its own secretion by negative feedback mechanism. It acts on hypothalamus and inhibits the secretion of LHRH. When LHRH secretion is inhibited, LH is not released from anterior pituitary resulting in stoppage of testosterone secretion from testes. On the other hand, when testosterone production is low, lack of inhibition of hypothalamus leads to secretion of testosterone through LHRH and LH

Male climacteric

After the age of 50, testosterone secretion starts declining. This is accompanied by reduction in the after the age of 50, testosterone secretion starts declining. This is accompanied by reduction in the develop symptoms similar to those of female climacteric. The common symptoms are it flashes illusions of suffocation and mood change.

Properties and composition of secretion from seminal vesicles

- **Properties**

The secretion from seminal vesicles is mucoid and viscous in nature. It is neutral or slightly alkaline in reaction. This adds to the bulk of semen as it forms 60% of total semen

- **Composition**

The secretion from seminal vesicles contains fructose, phosphorylcholine, fibrinogen, ascorbic acid, citric acid, pepsin6genand prostaglandin

- **Functions of secretion**
- Nutrition to sperms

The fructose and other nutritive substances from seminal vesicles are utilized bysperms after being ejaculated into female genital tract

- Clotting of semen

The fibrinogen from secretions of seminal vesicle is converted into the coagulum as soon as semen is ejaculated

- On fertilization

The prostaglandin from secretions of seminal vesicles may enhance the fertilization of ovum by the following processes

Increasing the receptive capacity of cervical mucosa for sperms causing reverse peristaltic movement of uterus and fallopian-tubes. This, in turn, increases the rate of transport of sperms in female genital tract during coitus

Properties and composition of prostatic fluid

- **Properties**

The secretion of prostate gland is a thin, milky and alkaline fluid. it forms 30% of total semen

- **Composition**

The secretion from prostate gland consists of sodium, calcium, zinc, citrate, cholesterol,

phospholipids, acid phosphatase, spermine, fibrinolysin jndjdotting-enzymes.

Functions of prostatic fluid

Maintenance of optimum ph for fertilization.The prostatic fluid provides optimum pH for the motility of sperms. Due to the metabolic end products from sperm, the fluid from vas deferens is acidic in nature. This inhibits the motility of sperms.

The vaginal secretions in females are highly acidic with a pH of 3.5 to 4.0. This also inhibits the motility of sperms. Generally, the sperms are non-motile at a pH less than 6.0.

The prostatic secretion neutralizes the acidity of vaginal secretions and maintains a pH of 6.0 to 6.5. At this pH, the sperms become motile and the chances of fertilization are enhanced.

- **Clotting of semen**

The clotting enzymes present in prostatic secretion cause conversion of fibrinogen (from seminal vesicles) into coagulum. It is essential for holding the sperms in uterine cervix.

- **Lysis of coagulum**

The coagulum is dissolved by fibrinolysin of the prostatic secretion so that, the sperms become motile.

- **Properties of semen**
    - Specific gravity: 1.028
    - Volume : 2 to 6 ml/ejaculation
    - Reaction : It is alkaline with a pH of 7.5. The alkalinity is due to the secretions from prostate gland.

- **Composition of semen**

Following is the composition of semen:

- Sperms :10%
- Products from seminal vesicle : 60%
- Products from prostate gland : 30%

Semen also has small amount of secretions from the mucus glands, particularly the bulbourethral glands.

- **Sperms**

The total count of sperm is about 100 to 150 million/ml of semen. When the sperm count falls below 20 millions/ml, sterility occurs. Though the sperms can be stored in male genital tract for longer periods, after ejaculation the survival time is only about 24 to 48 hours at a temperature equivalent to body temperature. The rate of motility of sperm in female genital tract is about 3mm/minute. The sperms reach the fallopian tube in about 30 to 60 minutes after sexual intercourse. The uterine contractions during sexual act facilitate the movement of sperms.

Structure of spermatozoon

Spermatozoon (pleural = spermatozoa) is the male reproductive cell, developed in the testis. It is also called the sperm. The matured spermatozoon is 60 µ long. It consists four parts.

- Head
- Neck
- Body
- Tail

Head

Head is oval shaped (in front view), with a length of 3 to 5µand width of up to 3µ. The anterior portion of head is thin. The head is formed by a condensed nucleus, a thin cytoplasm and a thin cell membrane. The anterior two-thirds of the head is like a thick cap called acrosome (helmet Galea capitis), formed from Golgi apparatus. The acrosome is made up of mucopolysaccharide and acid phosphatase. It also contains hyaluronidase and proteolytic enzymes. These enzymes are essential for the sperm to fertilize the ovum.

Neck

The head is connected to body by a short neck. Its anterior end is formed by thick disc shaped anterior and knob, which is also called proximal centriole. The posterior end is formed by another similar structure known as posterior end knob. This gives rise to the axial filament of body.

Body

It is cylindrical with a length of 5 to 9 µ and the thickness of 1 µ. The body of the sperm consists of a central core called axial filament covered by thin cytoplasmic capsule.The axial filament starts from posterior end knob of the neck. After passing through the body, it passes through a perforated disc called end disc or end ring centriole. Finally, the axial filament reaches the tail as axial thread. In the body, the axial filament is surrounded by a closely wound spiral filament consisting of mitochondria.

Tail

The tail of the sperm consists of two segments.

a. The chief or main piece of tail: it is enclosed by cytoplasmic capsule and it has an axial thread. It is 40 to 50 µ long.

b. The terminal or end piece of tail: It has only the axial filament.

Products from seminal vesicles

The secretion from seminal vesicles contains the following substances:

- Fructose
- Phosphorylcholine
- Fibrinogen
- Ascorbic acid
- Citric acid
- Pepsinogen
- Prostaglandin

Products from prostate gland

The secretion from prostate gland consists of the following products:

- Sodium
- Calcium
- Zinc
- Citrate
- Cholesterol
- Phospholipids
- Acid phosphatase
- Spermine

- Fibrinolysin
- Clotting enzymes.

Other substances present in semen :

- Phosphate
- Bicarbonate
- Hyaluronidase

MODERN PATHOLOGY

Infertility is defined as a failure to conceive within one or more years of regular unprotected coitus. Primary infertility denotes those patients who have never conceived. Secondary infertility indicates previous pregnancy but failure to conceive subsequently. Fecundability is defined as the probability of achieving a pregnancy within one menstrual cycle. In a healthy young couple, it is 20 percent. Fecundity is the probability of achieving a livebirth within a single cycle

Incidence

Eighty percent of the couples achieve conception if they so desire, within one year of having regular intercourse with adequate frequency (4-5 times a week). Another 10 percent will achieve the objective by the end of second year. As such, 10 percent remain infertile by the end of second year.

Factors Essential for Conception:

- Healthy spermatozoa should be deposited high in the vagina at or near the cervix (male factor),
- The spermatozoa should undergo changes (capacitation, acrosome reaction) and acquire motility (cervical factor).
- The motile spermatozoa should ascend through the cervix into the uterine cavity and the fallopian tubes.
- There should be ovulation (ovarian factor).
- The fallopian tubes should be patent and the oocyte should be picked up by the fimbriated end of the tube (tubal factor).
- The spermatozoa should fertilize the oocyte at the ampulla of the tube.

The embryo should reach the uterine cavity after 3-4days of fertilization. The endometriumshould be receptive by (estrogen,progesterone,IGF-1,cytokines, integrins) for implantation and the corpus luteum should function adequately.

Physiological consideration

Due to anovulation, infertility is the rule prior to puberty and after menopause. Bui it should be remembered that the girl may be pregnant even before menarche and pregnancy is e within few months of menopause. Conception is not possible during pregnancy as the pituitary gonadal axis is suppressed by hCG and hence, no ovulation. During lactation is infertility is said to be relative. Despite the fact that fact the patient is amenorrheic during lactation, ovulation and conception can occur. However, in fully lactating women breastfeeding 5-6 times a day and spending 60 minutes in 24 hours, pregnancy is unlikely up to 10 weeks postpartum.

Causes for infertility

Conception depends on the fertility potential of both the male and female partner. The male is directly responsible in about 30-40 percent, the female in about 40 - *55 percent* and both are responsible in about 10 percent cases. The remaining 10 percent, is unexplained, in spite of thorough investigations with modern technical knowhow. It is also strange that 4 out of 10 patients of unexplained category become pregnant within 3 years without having any specific treatment.

It is also emphasized that the relative subfertility of onepartner may sometimes be counterbalanced by the high fertility of the other.

Faults in the male

Defective spermatogenesis

- Obstruction of the efferent duct system
- Failure to deposit sperm high in the vagina
- Errors in the seminal fluid

FSH stimulates spermatogenesis from basal cellsof seminiferous tubules.sertoli cells envelope the germ cells and support spermatogenesis. Sertoli cell function is controlled by FSH and testosterone. Scrotal temperature should be l-2 ^{0}F less than the body temperature. LH is required for the synthesis of testosterone from the Leydig cells. FSH also stimulates the Sertoli cells to produce androgen binding proteins (ABP) and inhibin B. ABP binds to testosterone and dihydrotestosterone to maintain the local high concentration of androgens. Spermatogenesis and sperm maturation need a high androgenic environment. Inhibin B inhibits FSH secretion.

Spermatogenesis is controlled predominantly by the genes on Y chromosome. Approximately 74 days are required to complete the process of spermatogenesis. Additional 12-20 days are needed for spermatozoa to travel the epididymis.

Causes of Male Infertility

The important causes of male infertility are:

- Hypothalamic-pituitary disorders (1-2%).
- Primary gonadal disorders (30-40%).
- Disorders of sperm transport (10-20%) and
- Idiopathic (40-50%)

Pre – testicular	Testiculer	Post – testicular
• **Endocrine** Gonadotropin deficiency Obisity Thyroid dysfunction Hyperprolactinmmeia • **Psychosexual** Erective dysfunction Impotence • **Drugs** Antithypertensives Antipsychotics • **Genetic** 47 XXY (p 229) Y Chromosome deletions Single gene mutations	• Immotile Cilia (Kartagener Syndrome) • Cryptorchidism • Infection (Mumps orchitis) • Toxins - Drugs, Smoking, Radiadion • Varicocele • Immumologic • Sertoli cells - Only syndrome • Primary testicular failure • Oligoastheno teratozoospermia	**Obstruction of efferent duct** • Congenital -Absence of vas deferens -(Cystic fibrosis) Young's Syndrome • Acquired infection : Tuberculosis, Gonorrhea, • Surgical : Herniorrhaphy. Vasectomy **Others** Ejaculatory failure Retrograde ejaculation Hypospadias Bladder neck surgery

Congenital

- Undescended testes

The hormone secretion remains unaffected, but the spermatogenesis is depressed. vas deferens is absent (bilateral) in about 1-2 percent of infertile males.

- Kartagener syndrome (autosomal disease)
  There is loss of ciliary function and sperm motility.

- Hypospadias causes failure to deposit sperm high in vagina

- Thermal*Factor*

  The scrotal temperature is raised in conditions such as varicocele. Varicocele probably interferes with the cooling mechanism or increases catecholamine concentration. However, no definite association between varicoceles and infertility has been established.

- *Infection*

(a) Mumps orchitis after puberty may permanently damage spermatogenesis.

(b) The quality of the sperm is adversely affected by chronic systemic illness like bronchiectasis. Bacterial or viral infection of the seminal vesicle or prostate depresses the sperm count.

(c) *T. mycoplasma* or *Chlamydia trachomatis* infection is also implicated.

- *General Factors*

  Chronic debilitating diseases malnutrition or heavy smoking reduces spermatogenesis. Alcohol inhibits spermatogenesis either by suppressing Leydig cell synthesis of testosterone or possibly by suppressing gonadotropin levels.

- Endocrine

  Testicular failure due to gonadotrophins deficiency (Kallmann syndrome) is rare, FSH level is raised in idiopathic testicular failure with germ cell hyperplasia (sertoli-cell-only syndrome) hyperprolactemia is associated with impotence.

- *Genetic*

  Common chromosomal abnormality in azoospermic male is Klinefelter's syndrome (47 XXY). Gene deletion have been detected in the long-arm of Y chromosome (Yq) for patients with severe oligospermia and azoospermia

- Iatrogenic

  Radiation, cytotoxic drugs, nitrofurantoin. cimetidine, antihypertensive, anticonvulsant, beta blockers, and antidepressant drugs are likely to hinder spermatogenesis

- *Immunological Factor*

  Antibodies against spermatozoal surface antigens may be the cause of infertility. This results in clumping of the spermatozoa after ejaculation

- *Obstruction of the efferent ducts*

  The efferent ducts may be obstructed by infection like tubercular, gonococcal or by surgical trauma (herniorrhaphy) following vasectomy. In Young's syndrome, there is epididymal obstruction and bronchiectasis.

- Failure to deposit sperm high in the vagina (Coital problems)
  - Erectile dysfunction
  - Hypospasdias
  - Ejaculatory defect—premature, retrograde or absence of ejaculation

- *Sperm abnormality*
  - Loss of sperm motility (asthenozoospermia), abnormal sperm morphology (roundheaded sperm, teratozoospermia) are the important factors
  - Unusually high or low volume of ejaculate
  - Low fructose content
  - High prostaglandin content

- Undue viscosity

Objectives of investigation

- To detect the aetiological factor(s).
- To rectify the abnormality in an attempt to improve the fertility
- To give assurance with explanation to the couple if no abnormality is detected

When to investigate?

As per the definition, the infertile couple should be investigated after one year of regular unprotected exposure with adequate frequency. The interval is however, shortened to 6 months after the age of 35 of the woman and 40 years of man.

What to investigate?

The basic investigations to be carried out are :

(i) Semen analysis

(ii) Confirmation of ovulation

(iii) Confirmation of tubal patency

It is important that both partners should come at the first visit. Detailed general and reproductive history should be taken in presence of both. However, the clinical examination of each partner is carried out separately. No one is to be blamed. Age, duration of marriage, history of previous marriage and proven fertility if any, are to be noted.

A general medical history should be taken with special reference to sexually transmitted diseases, mumps orchitis after puberty, diabetes, recurrent chest infection or bronchiectasis. Relevant surgery such as herniorrhaphy, operation on testes.

Other surgery in the genital area are to be enquired. Occupational history should be directed towards exposure to excessive heat or radiation. Enquiry about the sexual history includes frequency of intercourse, full penetration of penis inside the vagina or orgasm in right time, whether either partner experiencing discomfort or lack of satisfaction. Social habits, particularly heavy smoking and alcohol are of importance

Examination

A full physical examination is performed to determine the general state of health. Examination of the reproductive system includes — inspection and palpation of the genitalia.

Attention should be paid to the size and consistency of the testicles. *Testicular volume* (measured by an orchidometer) should be at least 20 cm^3. Presence of varicocele should be elicited in the upright position.

Routine investigations include urine and blood examination including postprandial sugar.

*Seminal fluid analysis - This should be the first step in investigation.*because, if some gross abnormalities are detected (example being absence of sperm) the couple should be counselled for the need of assisted reproductive technology.

Collection

The collection is best done by masturbation failing which by coitus interruptus. The semen is collected in a clean wide mouthed dry glass jar. The sample so collected should be sent tothe laboratory as early as possible so that the examination can be performed within two hours. The coitus should be avoided for 2-3 days prior to the test.

Normal values

Normal Semen values as suggested by WHO (1999)	
Volume	2ml or more
pH	7.2- 7.8
Sperm Concentration	20 Million /Ml or more

Total Sperm Count	Above 40 Millions per ejaculate
Motility	50% or more
Morphology	15% or more
Viability	75 % or more living
Lecocytes	Less than 1 million per ml
Sperm agglutination	< 2 (Scale 0 -3)

The figures given are an average. Considerable variation occurs from person to person and at different times in any one individual.

It should be borne in mind that the sperm count gives reflection of the man's health status 74 days back, when actually the spermatozoa were produced.

As previously mentioned, there is wide range of normalcy and it is not wise to interpret the analysis as abnormal, if the values are found lower than mentioned. However, one should repeat the test at least twice at about two and half months interval, if the report is abnormal.

In selected cases, biochemical tests of creatine phosphokinase and reactive oxygen species are done as sperm function tests. Creatinine phosphokinase helps sperm transport while reactive oxygen specis and the peroxides interfere with sperm function.

*Normal male fertility requires*a count of over 20 million spermatozoa per ml and a progressive motility of over 25 per cent. However, it is not rare to have pregnancy with a sperm count of 5 million per ml. If the semen analysis is normal and the wife confirms that ejaculation takes place in her vagina, no further investigations are needed in the male. Semen values normally vary widely. Two properly performed semen analysis at least 4 weeks apart should be done when one report is abnormal.

In *depth evaluation*

These are needed in cases of,

(a) Azoospermia

(b) Oligospermia

(c) Low volume ejaculate

(d) Problems of sexual potency

Further diagnostic protocols has been appropriately designed

Serum FSH, LH, testosterone, prolactin, and TSH

Testicular dysfunction causes rise in FSH and LH. Low level of FSH and LH suggest hypogonadotrophic hypogonadism. Leydig cell dysfunction causes low testosterone and high LH level. Elevated prolactin due to pituitary adenoma may cause impotency.

Fructose content in the seminal fluid

Its absence suggests congenital absence of seminal vesicle or portion of the ductal system or both

Testicular biopsy

Is done to differentiate primary testicular failure from obstruction as a cause of azoospermia or severe oligospermia .The biopsy material is to be sent in Bouin's solution and not in formol saline.

Transrectal ultrasound (TRUS)

Is done to visualize the seminal vesicles, prostrate and ejaculatory ducts obstruction. Indicatios of TRUS are,

1) Azoospermia or severe oligospermia with a normal testicular volume.
2) Abnormal digital rectal examination
3) Ejaculatory duct abnormality
4) Genital abnormality

Vasogram is a radiographic study done to evaluate the ejaculatory duct obstruction. It is mostly replaced by TRUS.

Karyotype analysis

This is to be done in cases with azoospermia or severe oligospermia and raised FSH. Klinefelter's syndrome (XXY) is the commonest Micro deletions of long arm Y chromosome can also cause severe seminal abnormalities.

Immunological tests

Two types of antibodies have been described- sperm agglutinating and sperm immunobilishing; the latter is probably related to infertility. The antibodies are produced following infection (orchitis), trauma or vasectomy. These antibodies can be detected from the serum by the sperm immobilizing test. Presence of sperm antibodies in the cervical mucous is demonstrated by post – coital test.

Presence of plenty of pus cells requires prostatic massage. The collected fluid is to be examined by staining and culture to detect the organisms and appropriate antibiotic sensitivity.

Treatment of male is indicated in

(i) Extreme oligospermia
(ii) Azoospermia
(iii) Low volume ejaculate
(iv) Impotency
(v) Management is often difficult and unsatisfactory

To improve spermatogenesis the following measures may be helpful General care: Improvement of general health, reduction of weight in obese, avoidance of alcohol and heavy smoking are of help.

Medications that interfere spermatogenesis should be avoided in hypogonadotropic-hypogonadism the disorders of spermatogenesis can be treated with the following therapy with varying success.

hCG 5000 IU intramuscularly once or twice a week is given to stimulate endogenous testosterone production.

When the patient is found to be azoospermic and yet testicular biopsy shows normal spermatogenesis, obstruction of vas must be hMG or pure FSH (75-150 IU) is added to hCG when there is no sperm in the ejaculate with hCG alone.

Dopamine agonist (cabergoline) is given in hyperprolactinemia to restore normal prolactin and testosterone level. This improves libido, potency and fertility

Pulsatile GnRH therapy in infertile male with GnRH deficicncy (Kallmann's syndrome) is effective. It is administered by minipump infusion. Target is to maintain normal adult male LH levels. Cases with hypogonadotropic hypogonadism may also respond with GnRH therapy

Hypergonadotropic-hypogonadism, no form of medical treatment can improve fertility in men. Treatment options available are insemination with donor sperm or adoption when no sperm is available. IVF with ICSI may be done in cases with severe oligospermia

Clomiphene citrate 25 mg orally daily for 3 months is given. It increases serum level of FSH, LH and testosterone

Presence of antisperm antibodies in the male and its significance is unclear. Currently intrauterine insemination (IUI) is the choice of treatment for such cases.

Leukocytospermia: Genital tract infection needs prolonged course of antibiotics. Generally doxycycline or erythromycin is given for a period of 4-6 weeks depending on the response. However, leukocytospermia does not always predict infection and it may not have any effect on fertility

Retrograde ejaculation: Phenylephrine (a-adrenergic agonist) is used to improve the tone of internal urethral sphincter. Sperm may be recovered from the neutralized urine. Processed spermatozoa could be used for IUI.

Teratospermia, asthenospermia: Specific causes are unknown. No treatment is available. Donor insemination (AID) is the option.

Genetic abnormality:

Artificial insemination with donor sperm (AID) is the option as no other treatment is availablesuspected. This should be corrected by microsurgery -vasoepididy inostomy or vasovasostomy. After vasovasostomy patency is obtained in about 80 percent of cases and pregnancy rate is about 50 percent

Surgery for varicocele for improvement of fertility is not helpful. Hydrocele is corrected by surgery.

Orchidopexy in undescended lesies should be done between 2-3 years of age to have adequate spermatogenesis in later life.

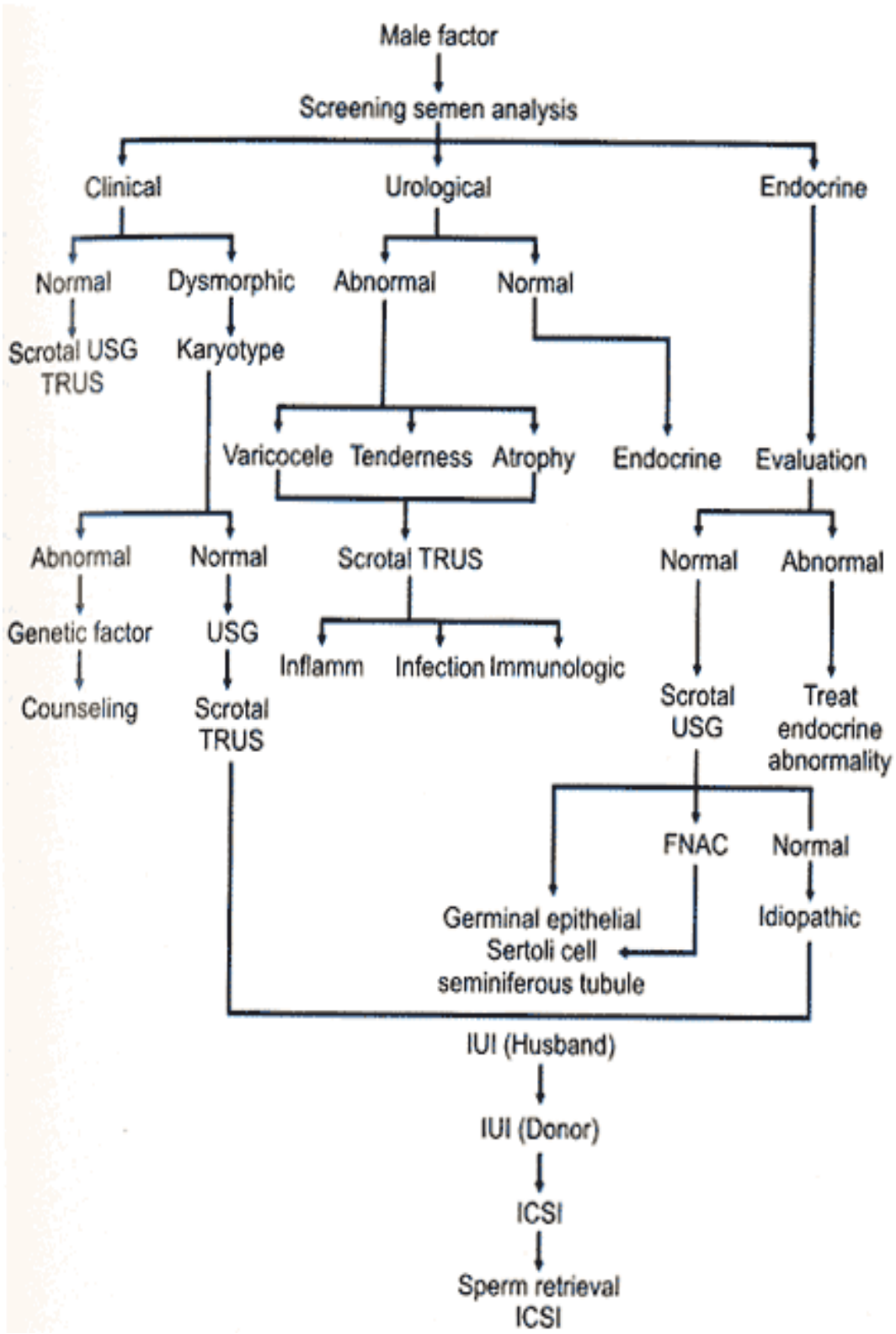
Psychosexual treatment may be of help. Hyper- prolactinaemia needs further investigation and treatment. For erectile dysfunction sildenafil (25-100 mg) or tadalafil (10-20 mg) is currently advised. A single dose (depending on response) is given orally one hour before sexual activity. In unresponsive cases, artificial insemination is to be thought of.

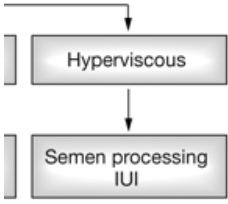
Assisted reproductive technology (art) for male infertility.

Prospect of male infertility has improved significantly with the advent of ART. IUI,TESE, PESA, MESA and intracytoplasmic sperm injection (iCSI) are now the treatment available for infertile males .

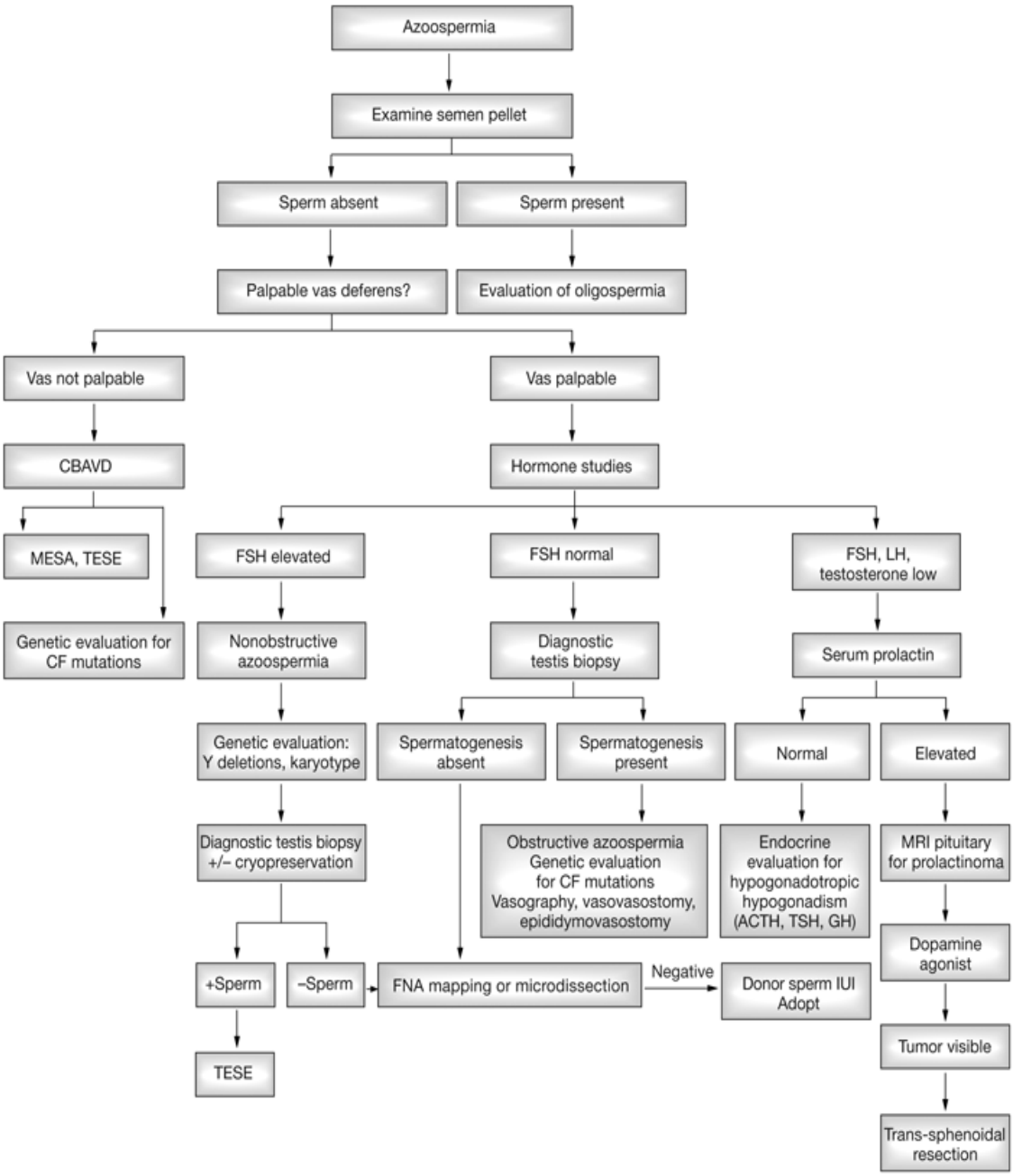
Investigastions for male infertility in modern view

Semen analysis flow chart





Azoospermia treatment



Materials and method

Study enrollment

- The 40 patients were selected from the out patients department (OPD) and inpatients department (IPD) of Government Siddha Medical College, Palayamkottai with the clinical symptoms of '*Aann maladu*' . Those patients were screened using the screening proforma (Form-I) and examined clinically for enrolling in the study based on the inclusion and exclusion criteria. Based on the inclusion criteria the patients will be included first and excluded from the study on the same day if they hit the exclusion criteria.

- The patients who were enrolled in this study was informed about the study (Form IV-A). The information was given to the patients in their own language with understandable form.

- After ascertaining the patients' willingness, a written informed consent obtained from them in the consent form (Form IV).

- Unique registration card in which patients Register number of the study, Address, Phone number and Doctors phonenumber etc. was given.

- Complete history, complaints and duration, examination findings all were recorded in the prescribed proforma in the history and clinical assessment forms separately. Screening Form- I was filled up; Form I-A, Form –II and Form –III was used for recording the patients' history, clinical examination of symptoms and signs and lab investigations respectively.

Inclusion criteria:

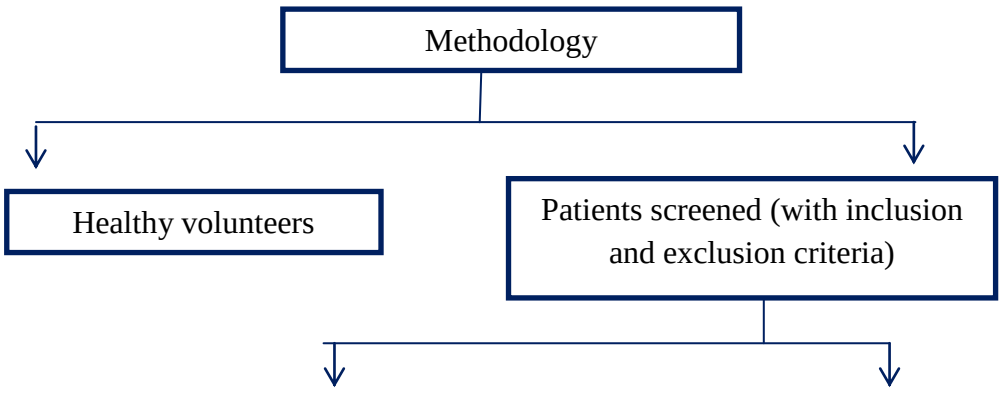
- Undiagnosed patient with related symptoms.
- Age 23 to 50 years
- Male Patient

- History of not getting child after 2 years of marriage.
- Patients who are willing to give semen, blood and urine for laboratory investigation

Exclusion criteria:

- Diabetes mellitus
- Hypertension
- Hydrocele
- Erectile dysfunction

Flow chart of the design



Investigations during the study:

The patients were subjected to basic necessary laboratory parameters during the study

Treatment during the study:

Normal treatment procedure followed in GSMC will be prescribed to the study patients and the treatment will be provided at free of cost.

Study period

- Total period - 24 months
- Recruitment for the study - Up to 22 months
- Data entry analysis - 1 month
- Report preparation and submission - 1 month

Data management

- After enrolling the patient in the study, a separate file for each patient were opened and all forms were filed in the file. Study No. and Patient No. were on the top of file for easy identification and arranged in a separate rack at the concerned OPD unit. Whenever study patient visits OPD during the study period, the respective patient file were taken and necessary recordings were made at the assessment form or other suitable form.

- The screening forms were filed separately

- The Data recordings were monitored for completion and adverse event by HOD and Faculties of the department. Any missed data found in during the study, were collected from the patient, but the time related data were not be recorded retrospectively

- All collected data were entered using MS access/excel software in the computer.

Statistical analysis

All collected data were entered in to computer using MS Access/MS Excel software by the investigators. Descriptive analyses were made and necessary tables/graphs were generated to understand the profile of patients included in the study. Then statistical analyses for significance of different diagnostic characteristics were done. Student‘t’ test and chi-square test were proposed to be performed for quantitative and qualitative data.

Outcome of study

- Evaluation of the ancient semen analysis technique
- Cost Effective Diagnosis
- It helps to promotion of self-diagnosis methods
- It is very useful for Remote Areas, where the lab facility is not available
- Natural diagnostic tool.

Ethical issues:

- To prevent any infection, while collecting blood sample from the patient, only disposable syringes, disposable gloves, with proper sterilization of lab equipments was be used
- The data collected from the patient was be kept confidentially
- The patient was be informed about the diagnosis
- After the consent of the patient (through written consent form) they were enrolled in the Study
- Informed consent were obtained from the patient explaining in the understandable language to the patient
- This study involves only the necessary investigations
- No other unwanted investigation would be done
- Normal treatment procedure followed in GSMC and Hospital will be prescribed to the study patients
- There were no infringement on the rights of the patient.

Assessment forms

Form –I screening and selection Pro-forma

Form –IA History Pro-forma on enrollment

Form II Clinical Assessment on enrollment

Form –III Laboratory investigations on enrollment, during the study

Form –IV Consent form
(Vernacular and English versions)

Form -IV- A Patient Information sheet (Vernacular and English versions)

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Results and Discussion

The 40 patients were selected from outpatient department (OPD) at the Government Siddha Medical College, Palayamkottai, Tamil Nadu according to the criteria for inclusion and exclusion. The patients will be investigated according to the Siddha diagnostic methods and modern diagnostic methods. In Siddha diagnostic method *Sparism* (Palpation), *Naa* (tongue), *Niram* (colour), *Mozhi* (speech), *Vizhi* (eyes), *Malam* (stools),*Moothiram* (urine) and*Naadi* (Pulse) were observed. Further Neikuri, Semen analysis and *Manikadai* were examined according to Siddha diagnostic methods. In modern aspect Semen analysis such as sperm count and fructose were analyzed. All the data were recorded in specific pro forma.

1. Age

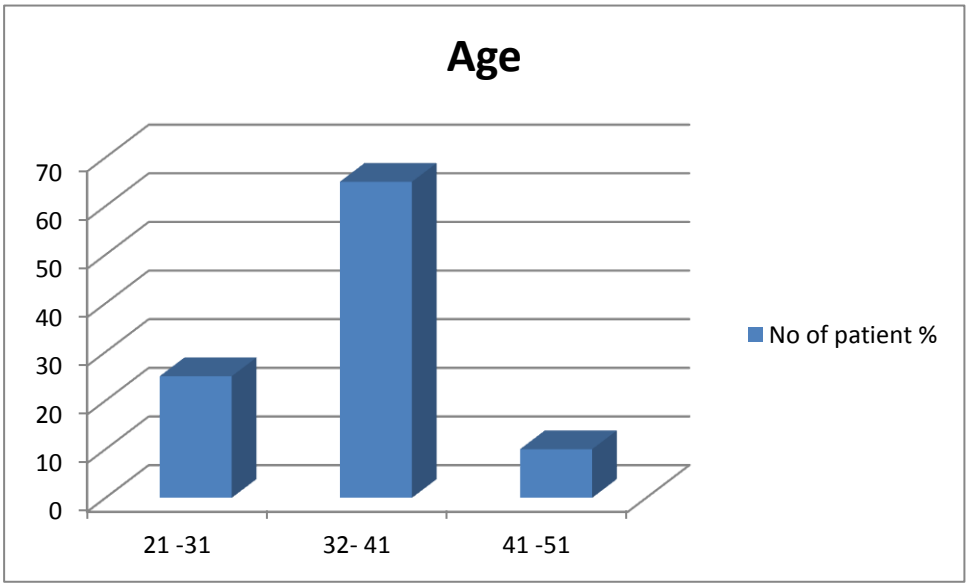

Chart 1

As shown in the chart, among the 40 patients 25 % of patients are between age of 21 – 31, 65 % of patients are in 31 – 41 and 10% of patients are in above the age 41.

2. Occupation

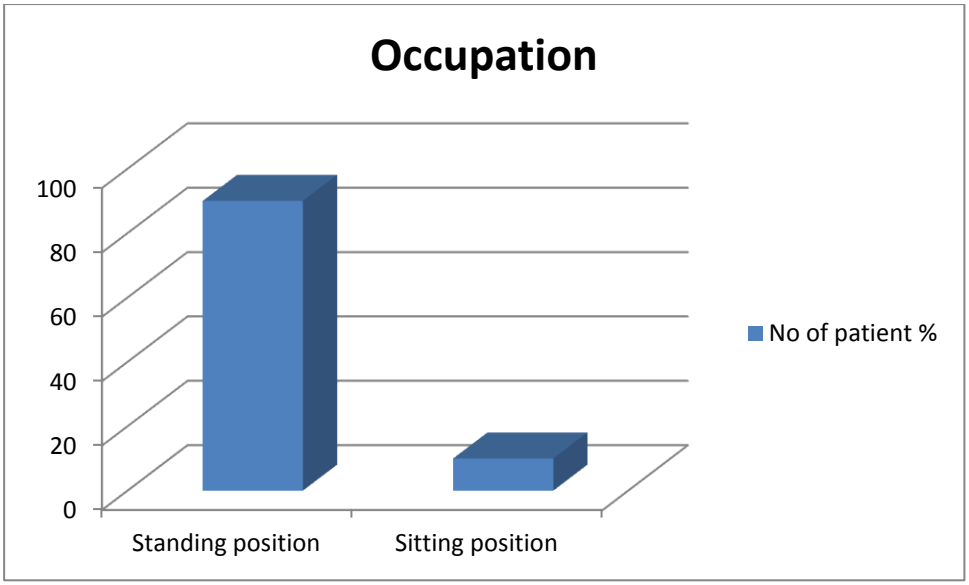

Chart 2

As shown in the chart 90 % of patients jobs are related with standing position and 10 % of subjects are related with seated position.

3. Educational status

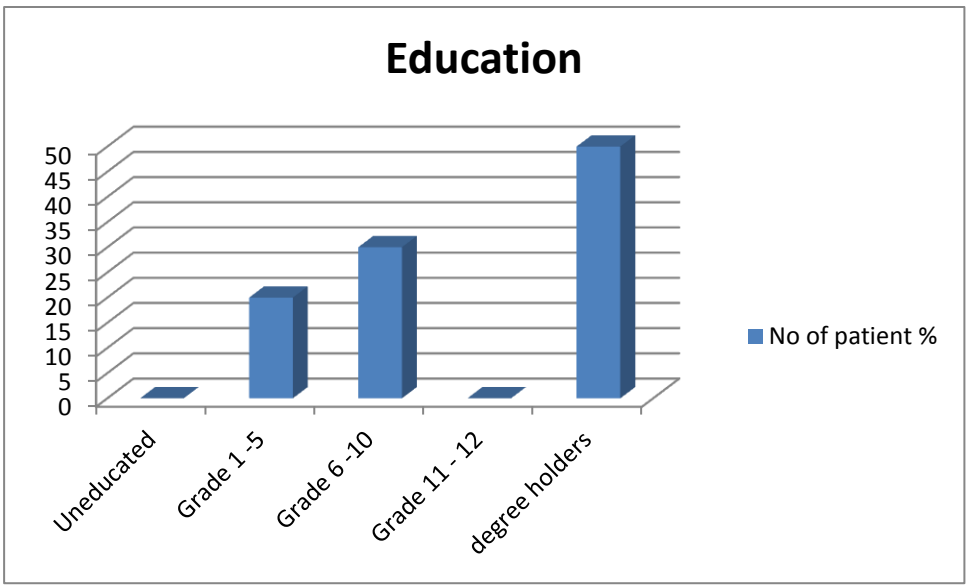

Chart 3

As shown in the chart 50 % of the subjects are educated up to grade 10 and 50 % subjects are degree holders.

4. Habit

Chart 4

As shown in the chart 80 % of the subjects are non smokers, 80% of subjects are non alcoholic and 95 % subjects non betel chewers.

5. Consanguinity marriage

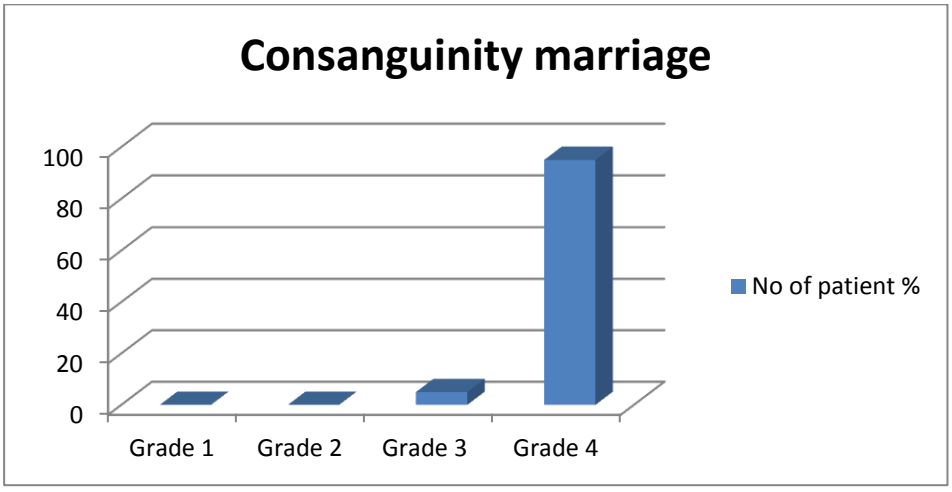

Chart 5

As shown in the chart there is no grade 1 and 2 consanguinity marriage. 95 % of subjects were in grade 4 and 5 % of subject was in Grade

(Grade 1 -Parent /Child ; Grade 2 -Sibling; Grade 3- Aunt,Uncle,Niece,Nephew; Grade 4 - Others)

6.*Naa* (Tongue)

6.1 *Niram* (Colour of the tongue)

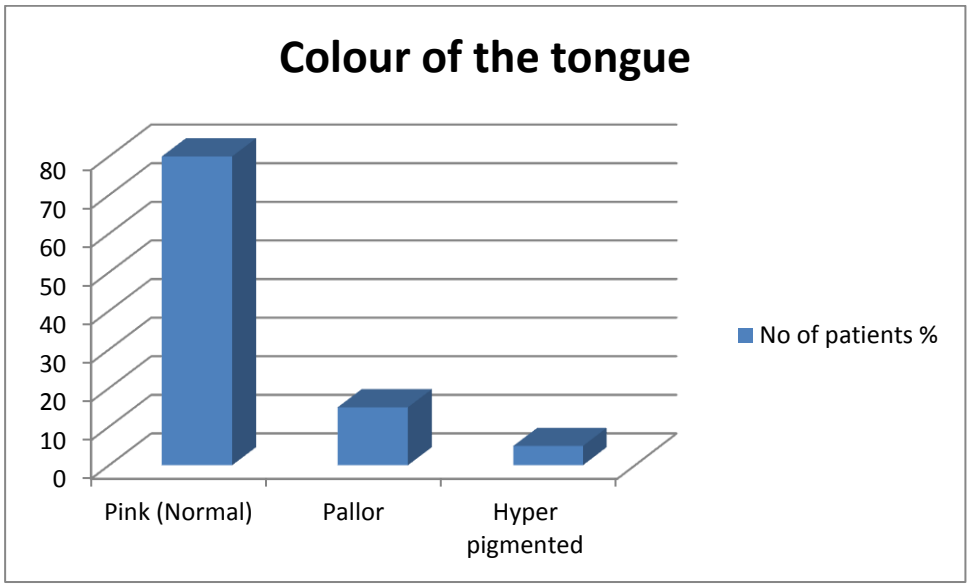

Chart 7

As shown in the chart 80 % of patients had normal tongue and 15 % and 5 % of patients had pallor and hyper pigmented respectively.

6.2 Texture of tongue

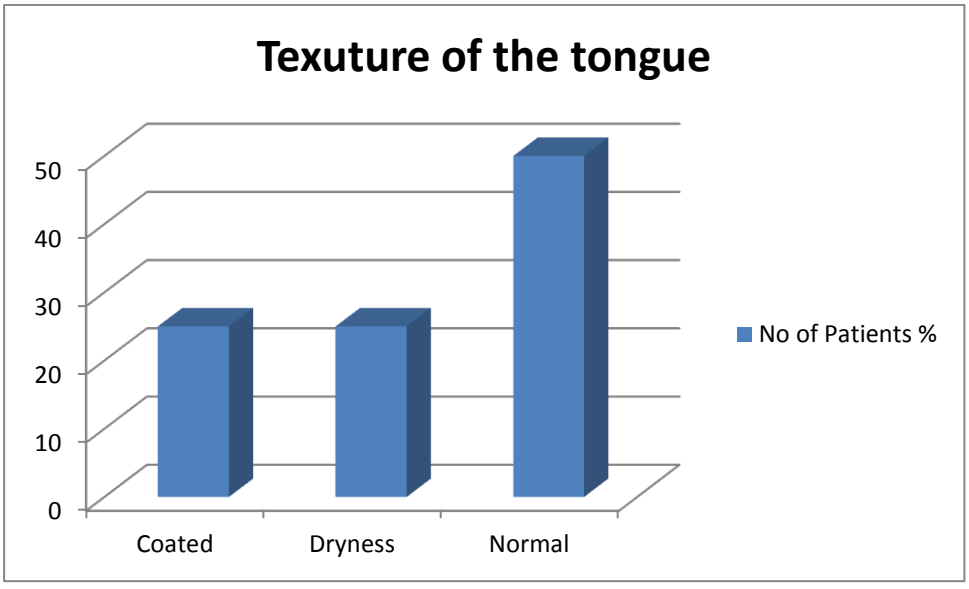

Chart 8

As shown in the chart 50 % of subjects were in normal tongue and each dryness and coated were in 25 % of subjects

6.3 Fissures of the tongue

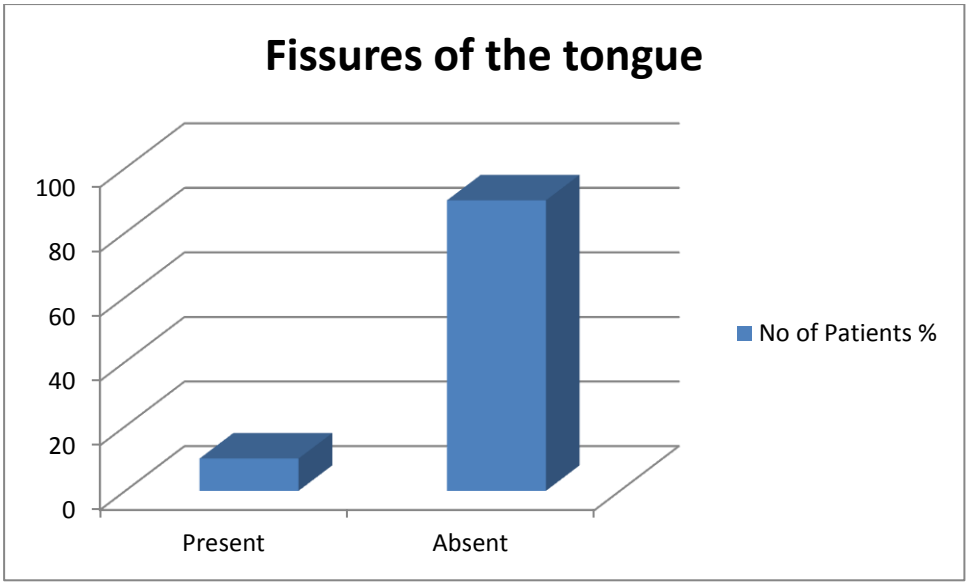

Chart 9

As shown in the chart 10 % of subjects had fissures in tongue and 90 % had normal tongue.

7. *Niram* (Colour of the skin)

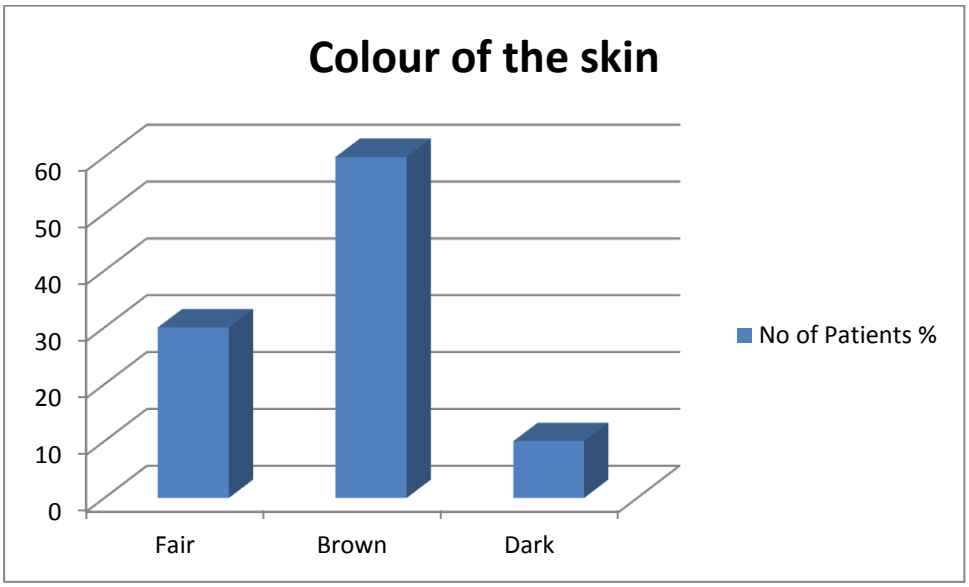

Chart 10

As shown in the chart 30 % of patients were fair and 60% and 10 % of patients were brown and dark in colour respectively.

8. *Mozhi* (Pitch)

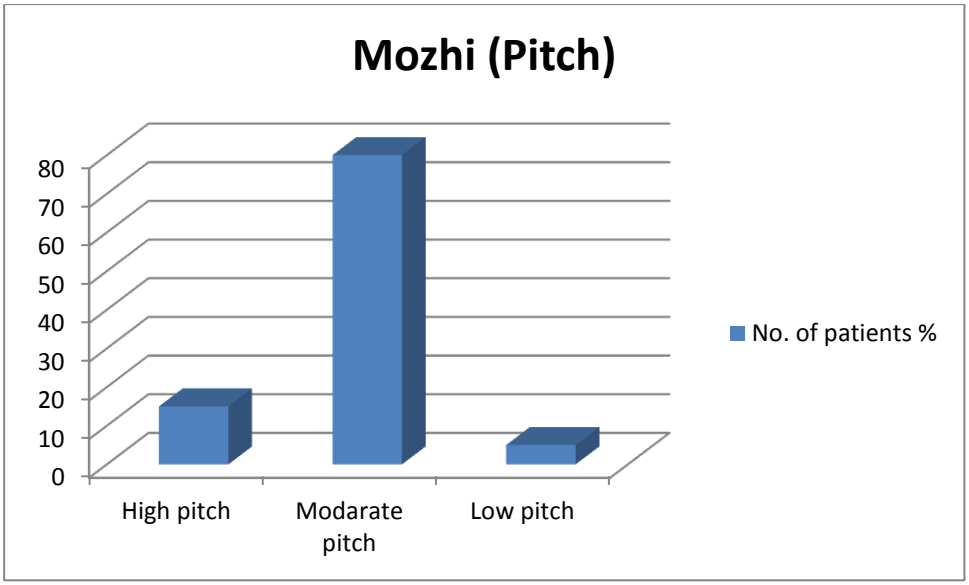

Chart 11

As shown in the chart 15 % and 5% of patients had high and low pitch respectively and 80% of patients were in normal pitch.

9. *Vizhi* (Eye)

9.1 Colour of Ven *vizhi* (Sclera)

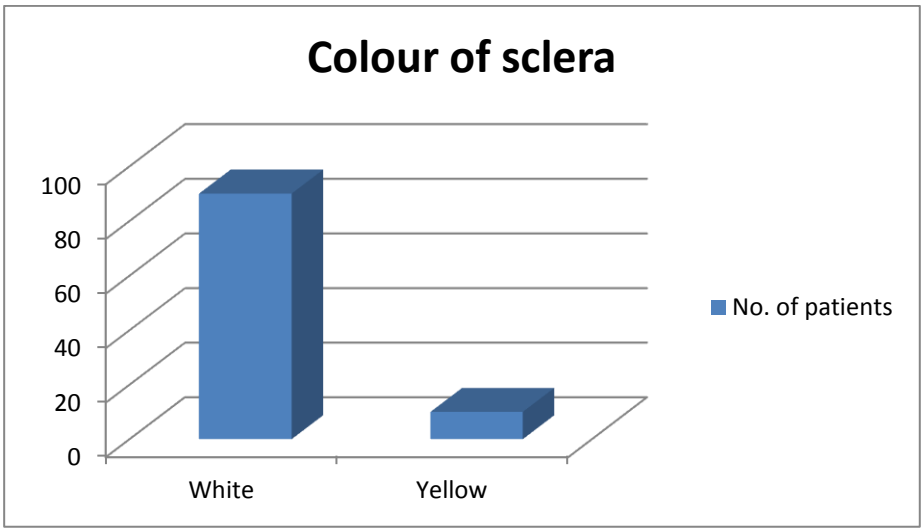

Chart 12

As shown in the chart 90 % of patients had normal (white) colour sclera and 10% of patients had yellow colour sclera.

9.2 Colour of the conjunctiva

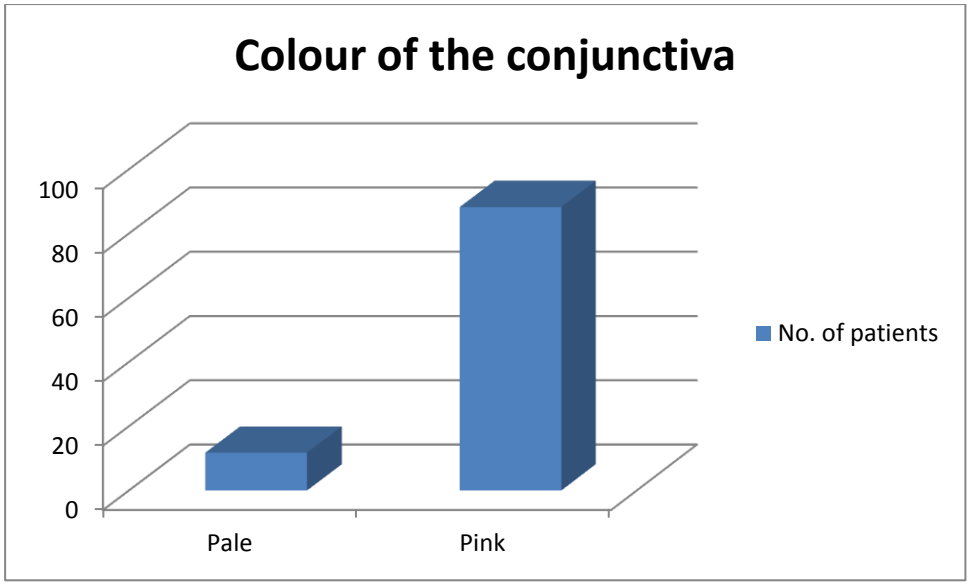

Chart 13

As shown in the chart 88.23 % of patients had normal (white) colour conjunctiva and 11.76 % of patients had pale colour conjunctiva.

10. *Sparisam*

10.1 Temperature

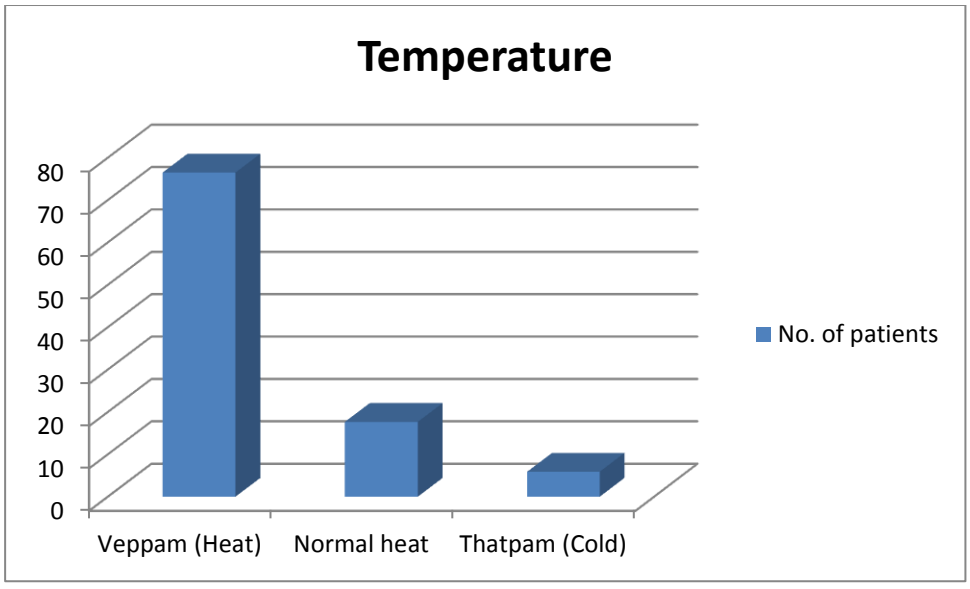

Chart 14

As shown in the chart 76.47 % of patients had heat and 17.64% and 5.88% of patients had Normal and cold skin respectively.

10.2 Dryness of the skin

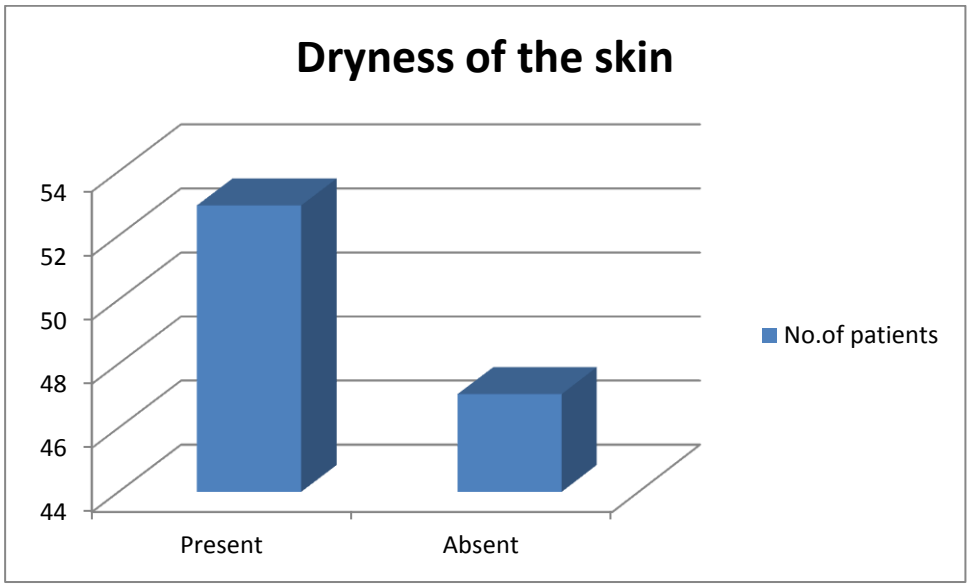

Figure 15

As shown in the chart 52.94 % of patients had dry skin and 47.05 % of patients had normal skin.

11. *Malam* (constipation)

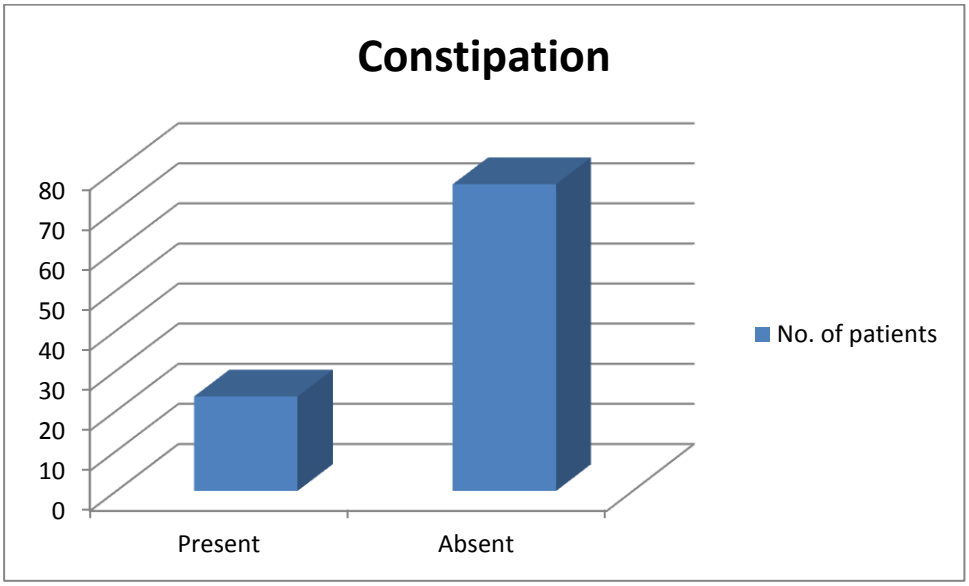

Chart 16

As shown in the chart 23.52 % of patients had constipation .

12. *Naadi* (Pulse)

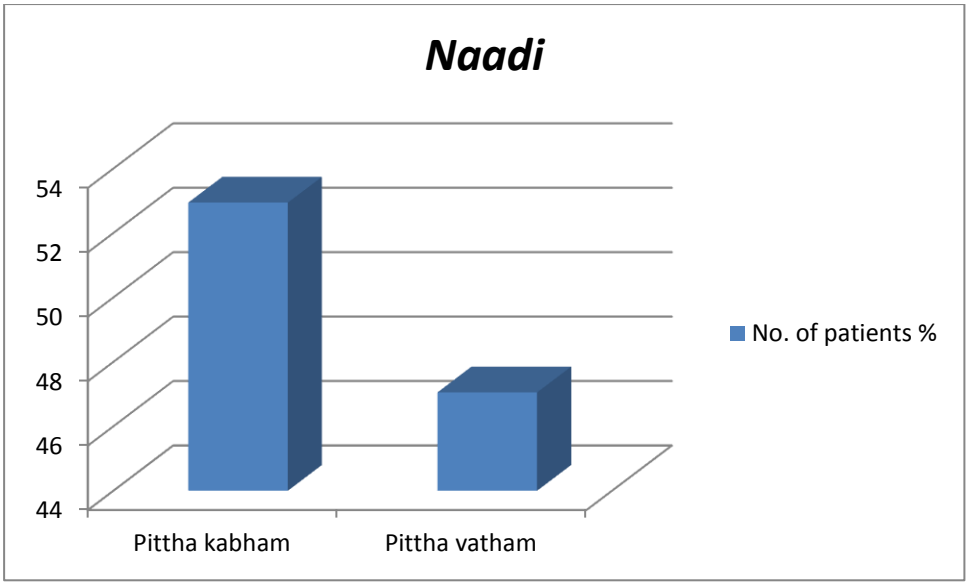

Chart 17

As shown in the chart 52.94 % of patients had *Pitthakabham* and 47.05 % of patients had *Pitthavathamnaadi*.

13. Urine

13.1 Colour of the Urine

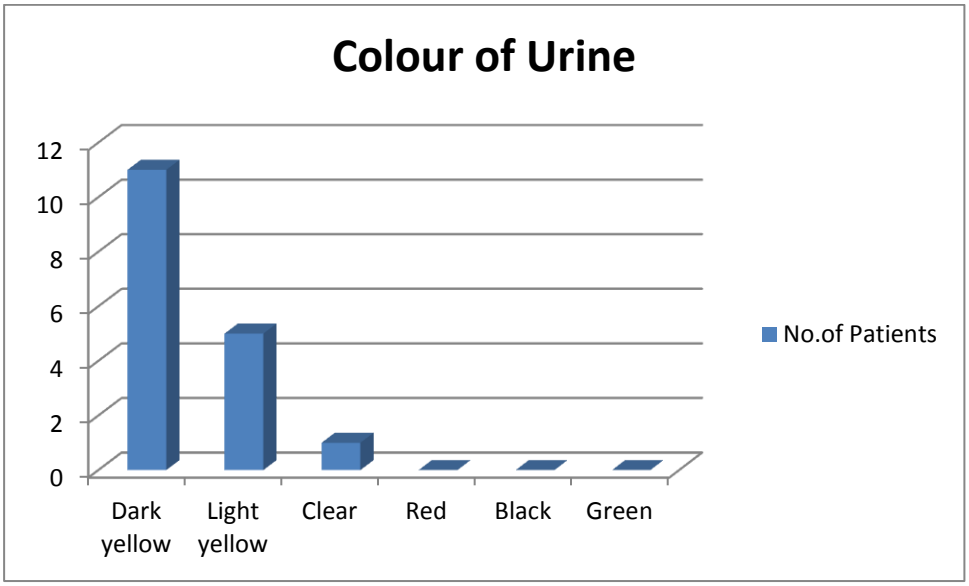

Chart 18

As shown in the chart 64.7 % and 29.41 % of patients dark yellow and light yellow colour urine respectively. 5.88 % of patient had clear urine.

13.2 ***Nurai*** **(Froth)**

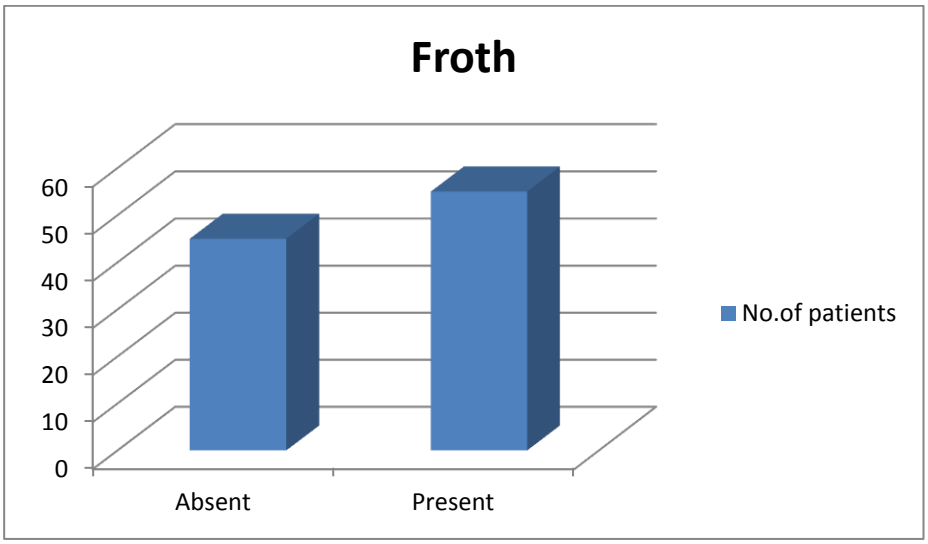

Chart 19

As shown in the chart 55 % of patients had frothy urine.

13.3 *Manam* (Smell)

No patient had abnormal smell

14. *Nei kuri*

14.1 Shape of the oil drop

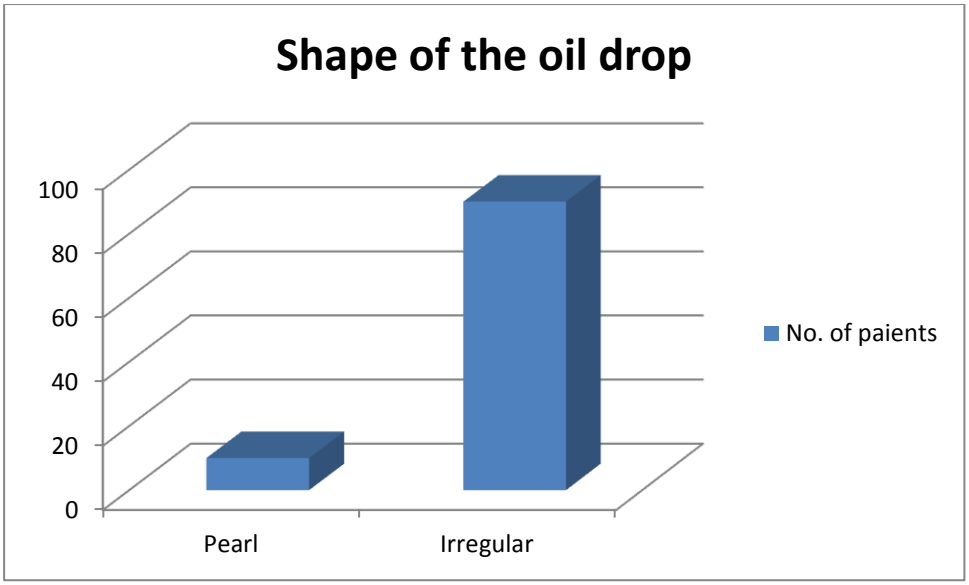

Chart 20

As shown in the chart 90% of patients had irregular shape and 10 % of patients had pearl shape oil spreading.

14.2 Spreading of oil in the urine

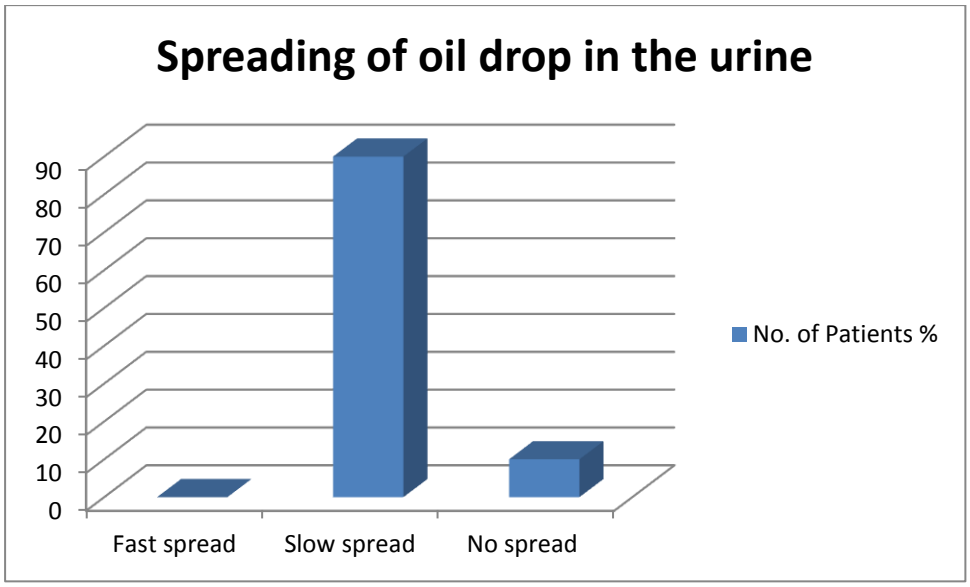

Chart 21

As shown in the chart 90 % of patients had slow spreading and 10 % of patients had no spreading of oil in the urine.

15. *Manikkadai*

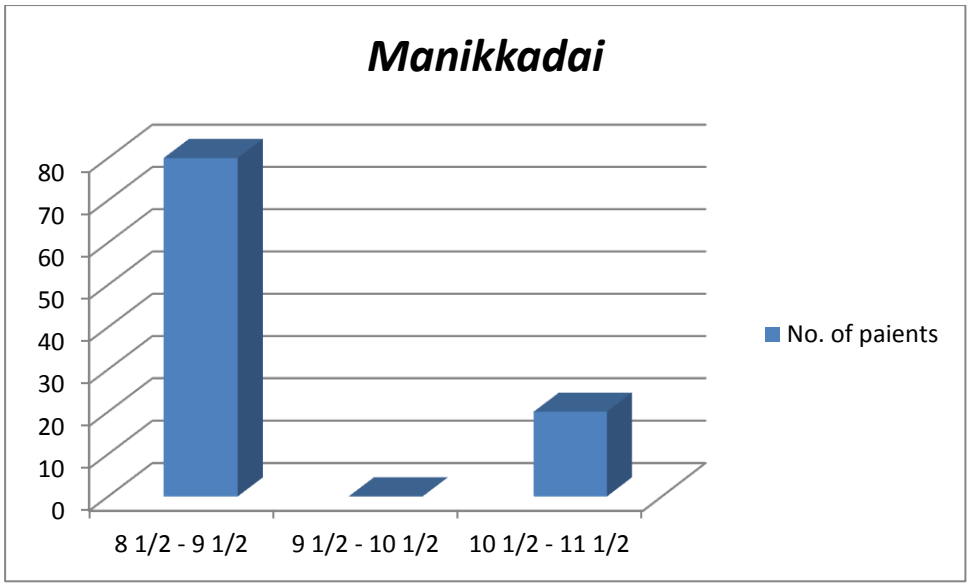

Chart 22

As shown in the chart 80 % of patients had manikkadai between 8 ½ - 9 ½ and 20 % of patients had manikkadai between 10 ½ - 11 ½ .

16. Sperm count

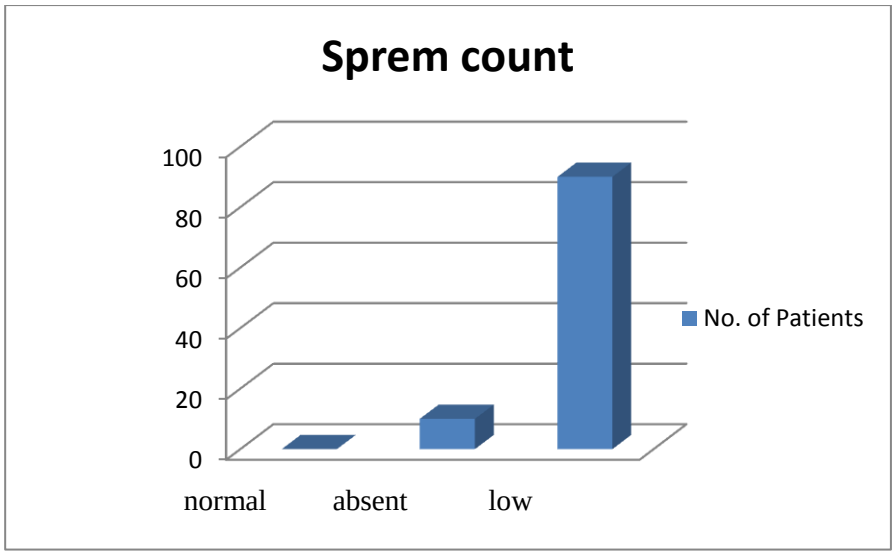

Chart 23

As shown in the chart 90 % of low sperm count. The sperm count is absent in 10 % of patients.

17**. Fructose analysis**

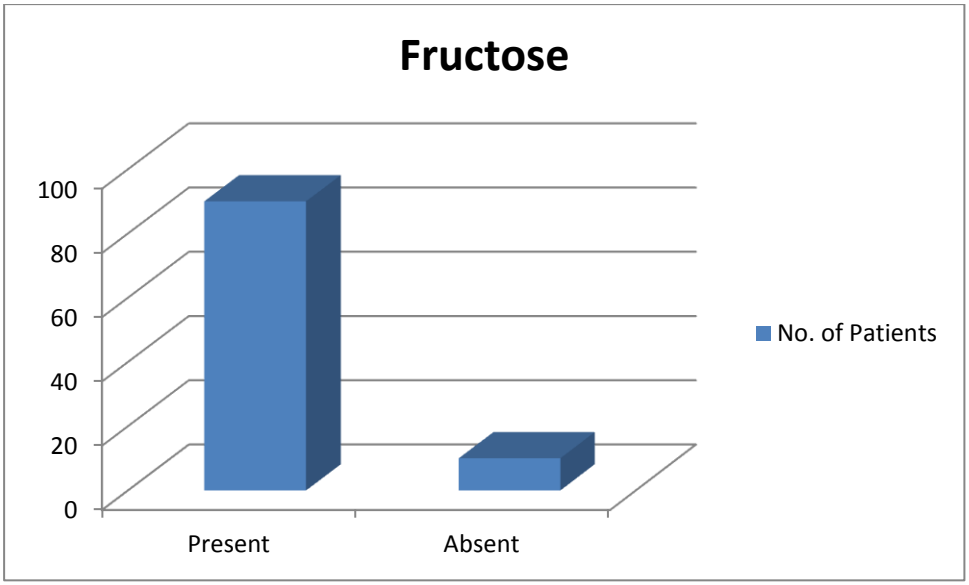

Chart 24

As shown in the chart 90 % of having fructose positive in semen analysis. The fructose was not detected in 10 % of patients.

18. ***Pancha patchi***

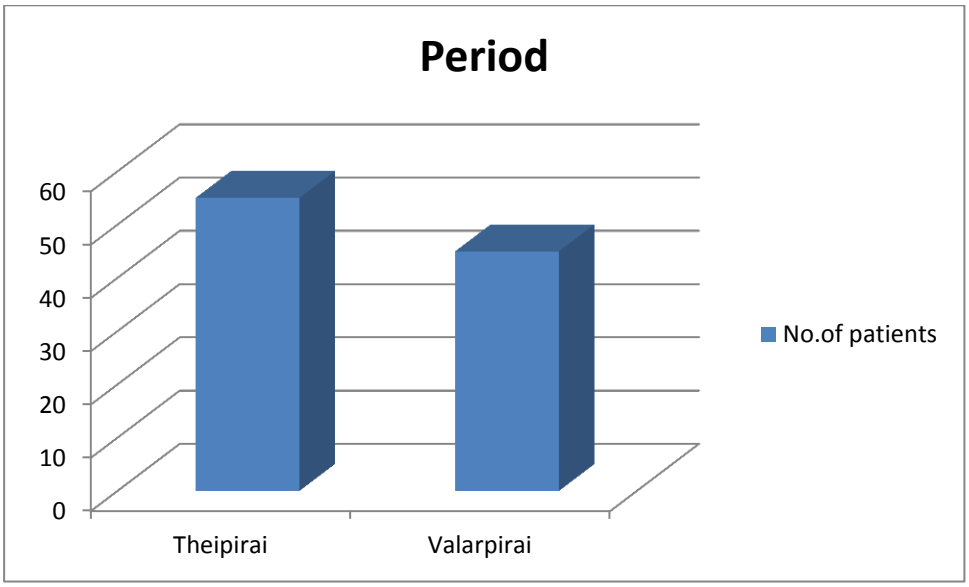

Chart 25

Among the 40 cases 45% of patients consult in *Valarpirai* period and 55% of patients consult in *Theipirai*period.

18.1 ***Theipirai***

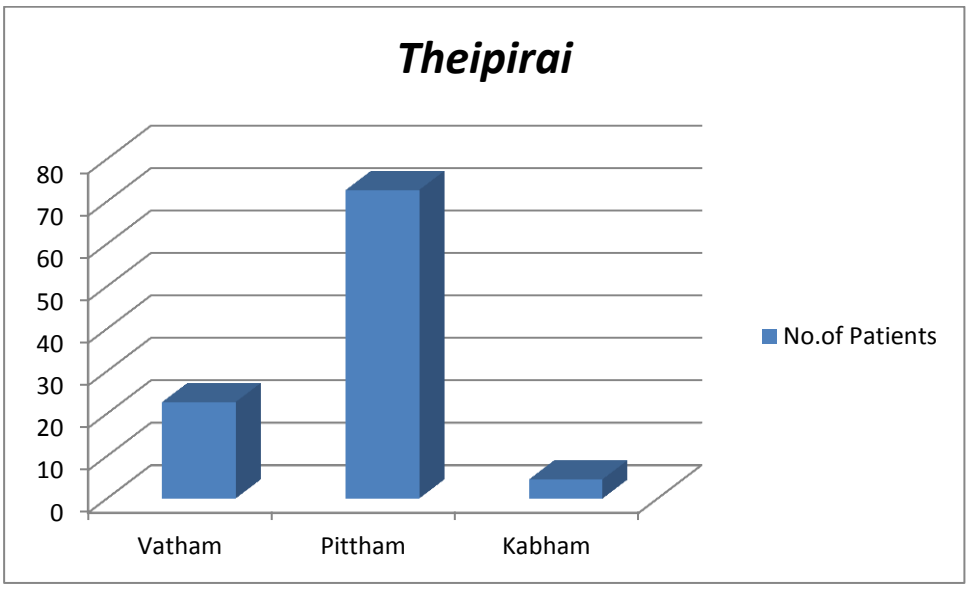

Chart 26

As shown in the chart, among the 22 patients, 72.72% of patients were affected by*Pittham*. 22.72 % and 4.54 % of patients were affected by *Vatham* and *Kabham*respectively.

18.2 *Valarpirai*

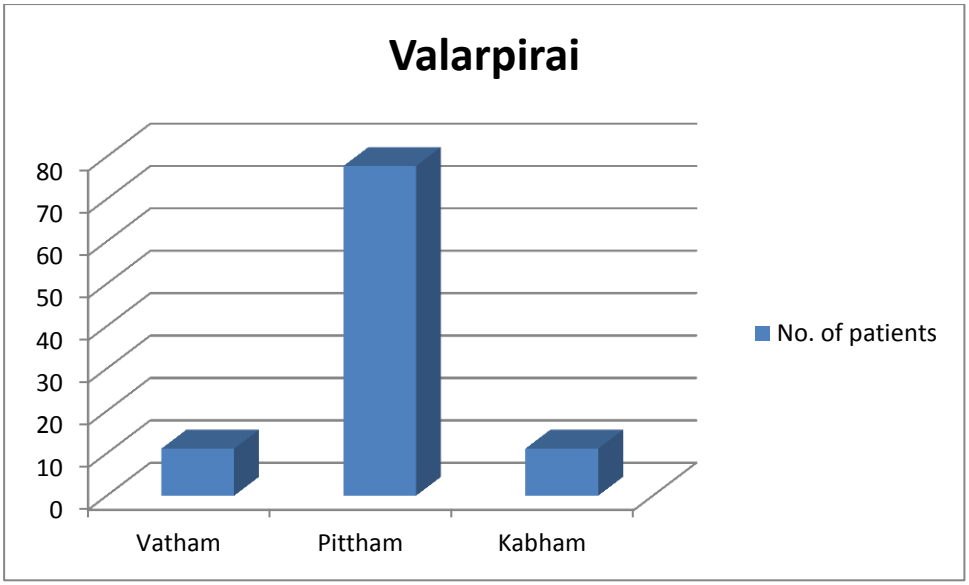

Chart 27

As shown in the chart, among the 18 patients, 77.77 % of patients were affected by *Pittham*. 11.11 % and 11.11 % of patients were affected by*Vatham* and *Kabham* respectively.

18.3 Aadharangal

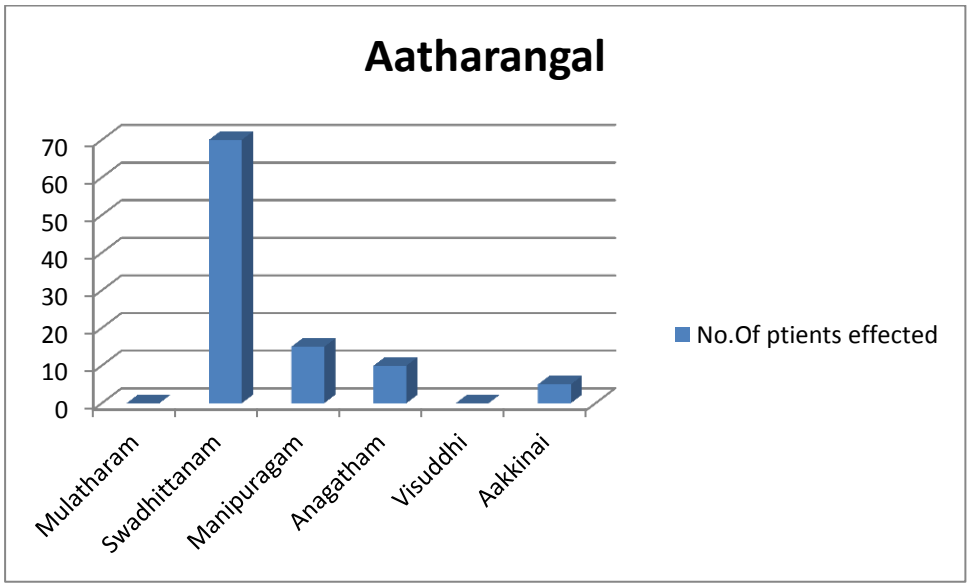

Chart 28

As shown in the chart 75 % of patients were affected in Swadhittanam. 15 % and 10 % of patients were affected in manipuragam and Anagatham.

Discussion

The author has selected '*Aann maladu*' for the dissertation, because it is one of the significant social, medical & economic burden for individual & the society. World widely it affects average 25% of couples. World Health Organization (WHO) estimate, infertility affects one in six couples worldwide, and it is known that the male is involved in up to 50 % of cases, currently. In India infertility is a common and distressing problem.

Further diagnosis and trace the cause of infertility are essential to the treatment. Currently a number of scientific laboratory parameters available to detect the infertility in the modern medical practice. Even though the*saints have used number of parameters to detect the infertility and find out the etiology, whereas all the techniques that described by saints were hided according to various reasons. Some printed literatures* written by the ancient saints, *described these techniques in the form of verses. It is essential to discover all these techniques practically to explore to the world. Scientific research is a method to explore the Siddha diagnostic methods for Aann maladu* (infertility) to the world. Modern diagnostic methods used for the confirmation studies only.

40 patients were selected from outpatient department (OPD) at the Government Siddha Medical College, Palayamkottai, Tamil Nadu according to the criteria for inclusion and exclusion. The author have document the Siddha diagnostic method such as ancient technique of semen analysis, *Ennvagai thervu, Nei kuri, Manikkadai* and *Iympul Iyakka Vidhi* (Panchapatchi), to diagnose the male infertility (*Aann maladu*) through this study. It will be useful to not only Siddha system of medicine also to the entire world.

Among the 40 patients 25 % of patients were between the age of 21 -31. Rests of the patients were above 31years. 50 % of patients were high educated and 5 % of patients had grade 4 consanguinity marriage. There are various causes of infertility as anatomical, pathological, environmental and occupational.According to the data 90 % of patients jobs are related with standing position and 5 % of patients are liability to driving. Thus it may be a cause for infertility. Based on the habits more than 80 % of patients are non-smokers and non-alcoholic. According to the review of literature alcohol and smoking are the causes for male infertility. So further studies need to prove the correlation between habit and male infertility.

According to the *Ennvagi thervu,* 15% and 5% of patients were observed Pallor and hyper pigmented tongue. Each 25 % of patients had dryness and coated tongue. Only two patientshad

fissures in tongue. 60 % of patients were in brown in colour. 30 % and 10% were fair and dark respectively. 80 % of patients had normal pitch in their voice. 15% and 5 % of patients had high and low pitch.10 % of patientshad yellow colour sclera and 15 % of patients had pale conjunctiva. 75 % of the patients had body heat. 55 % of patients had dryness of the skin. 55 % of patients had *Pittha kabham naadi*and 45% of patients had *Pittha vatham naadi*. 65% and 30 % of patients dark yellow and light yellow colour urine respectively. 5% of patient had clear urine. Abnormal smell was not sensed in any patients. 55 % of patients had frothy urine. The quotation also mentioned the patients who are having infertility are having frothy urine. Thus further study needed to confirm the above statement.

In the *Nei kuri* method 90 % of patients had irregular shape oil drop (Fig No. 01) and 10 % of patients had pearl shape (Fig No.02). 90 % of patients had slow oil spreading in urine. The oil drop doesnot spread in urine in 10 % of patients. 80 % of patients had *manikkadai* between 8 ½ - 9 ½ and 20 % of patients had *manikkadai* between 10 ½ - 11½. According to *Noi naadal Noi mudhal naadal thirattu* (Part – 1) mentioned, *manikkadai* for *thathunastam* is 8 ½ . It is significantly correlated with the cases of infertility.

According to the review of literature Iympul iyakka vithi is one of the important diagnostic tools in Siddha medicine. This method is based on the period. Among the 40 patients 45% of patients consult in *Valarpirai* period and 55% of patients consult in *Theipirai*period. Among the 55% of patients, 72.72% of patients were affectedby *Pittham*. 22.72 % and 4.54 % of patients affected by*Vatham* and *Kabham* respectively. Among the 18 patients, 77.77 % of patients were affected by*Pittham*. 11.11% and 11.11% of patients affected by*Vatham* and *Kabham* respectively.*Pitthakabham* and *Pitthavatham* are the main *naadi* affected in infertility. This is correlated with Iympul iyakka vithi. *Swadhittanam* was affected in 75 % of patients. *Manipuragam* and *Anagatham*was affected in 15 % and 10 % of patients. Male reproductive organ is located in the *Swadhittanam.* According to Iympul iyakka vithi the most affected area is swadhittanam. Further 50 % of patients zordiac sign is *Simmarasi* and 30% of patients zordic sign is *Meenarasi*.

Further the author had analysed the semen to confirm the *Aann maladu* according to modern diagnostic method such as sperm count and fructose analysis. In Semen analysis 90 % of patients had low sperm count. The sperm count is nil in 10 % of patient. The patients who were had low sperm having fructose thus the fructose is absence in patients who had no sperms.

The male infertility can be diagnose via through the *Naadi, Neer kuri, Nei kuri, Manikkadai* and *Iympul iyakka vithi*. However it more significant with *Nei kuri*, *Manikkadai* and *Iympul iyakka vithi.*

Summary

Aann maladu is classified as a disorder under *Yugi munichikitcha saaram*. The quotation was found in *Mahalir Maruththuvam* text book. The aim of this study was to evaluate and document the ancient semen analysis technique in the *Aannmaladu.*Review of literatures and diagnostic methods were collected by the author from various texts.The ancient diagnostic methods were mentioned in organized according to *Yugi munichikitcha saaram.*

40 cases were analyzed for this work according to inclusion and exclusion criteria. Proforma was maintained for this analysis for the 40 cases. Semen analysis such as floating of semen in the water and in urine, *Neer kuri, Nei kuri, Naadi, Manikkdai and iympul iyakka vithi* were observed and discussed.

In the *Nei kuri* irregular shape of oil drop was observed with slow spreading and in *neer kuri* majority of patients had yellow colour urine and frothy urine. There are two types of *naadi* was observed among the 40 cases such as *Pittha kabham* and *Pittha vatham*. Most of patients had *manikkadai* between 8 ½ - 9 ½. In *Iympul iyakka vithi,* the maximum patients consult in *theipirai* and maximum patients were affected by pittham. *Swadhittanam*is the area affected by maximum number of patients according to *iympul iyakka vithi.*

According to above observation the *Aann maladu* can be diagnosed above mentioned methods.

Conclusion

The Siddha system of medicine is one of the ancient traditional systems molded by *Siddhars. Siddhars* used their supernatural wisdom to keep the world healthy as invent the wonderful medicines as well as design life style methods to prevent and cure the diseases. In addition they devise and propounded the diagnostic methods to diagnose the disease.

The character of the semen and sugar content of semen in *Aann maladu* was mentioned under *Yugi munichikitcha saaram* and semen analysis such as floating of semen in the water or in the urine and frothy urine also mentioned. The aim of this study was to evaluate and document the ancient semen analysis technique in the *Aann maladu*.Further *Ennvagai thervu, Nei kuri, Manikkadai* and *Iympul iyakka vithi* also observed in this study.

40 cases were analyzed for this work according to inclusion and exclusion criteria. Proforma was maintained for this analysis for the 40 cases. Semen analysis such as floating of semen in the water and in urine, *Neer kuri, Nei kuri, Naadi, Manikkdai* and *iympul iyakka vithi* were observed and discussed.

In the *Nei kuri* irregular shape of oil drop was observed with slow spreading and in *neer kuri* majority of patients had yellow colour urine and with frothy. There are two types of *naadi* was observed among the 40 cases such as *Pittha kabham* and *Pittha vatham*. Most of patients had *manikkadai* between 8 ½ - 9 ½. In *Iympul iyakka vithi,* the maximum patients consult in *theipirai* and maximum patients were affected by pittham. *Swadhittanam*is the area affected by maximum number of patients according to *iympul iyakka vithi.* But in the semen analysis the semen dose not float in the water or urine.

According to above observation the *Aann maladu* can be diagnosed above mentioned ancient techniques without semen analysis. Further studies have been needed for semen analysis to prove the *Aann maladu.*

LINE OF TREATMENT

‘விரேசனத்தால் வாதம் தாழும்’

- To Decrease the Vathakutram, first purgative medicine had been given.
- For vatha kutram increased patients thuvarppu suvai medicines had given

‘வமனத்தால் பித்தம் தாழும்’

- To Neutralise the pitha kutram, Vomitting inducing medicine had been given
- For pitha kutram increased patients Inippu Kaippu Thuvarppu suvai medicines had given
- To Normalise the kaba kutram, Seetha veeriyam medicine had been given
- For Kabham Kutram increased patients Karpu, Pulippu, Uppu, suvai medicines had given
- Then to improve the veneer thathu medicine to be given
- To neutralize the kabha and regulate the pitham and vaatham

DIET AND ADVICE

Diets to be added

தாளி முருங்கைத் தழை தூதுளம்பசலை
வாளிலறு கீரையுநெய் வார்த்துண்ணி - லாணியென
விஞ்சுவார் போகத்தில் வீம்புரைத்த பெண்களெல்லாம்
கெஞ்சுவார் பின்வாங்கிக் கேள்

- **குணபாடம் முலிகை**

(Gunapadam - Part - 1 - page - 326)

Vegetarian diet

The following vegetables, fruits increases spermatogenisis activities and good erectile function.

கீரை	-	நறுந்தாளி, நன்முருங்கை, தூதுணம், பகலை, அறுகீரை
பூ	-	வாழை, தூதுவளை
காய்	-	முருங்கை காய், முருங்கை பிஞ்சு
பழம்	-	மாம்பழம், நாவல், திராட்சை, மாதுளை
வித்துக்கள்	-	முந்திரி, பாதாம், வாதுமை, முருங்கை

Non - vegetarian diet

The below Non veg diet causes libido

இறைச்சி	-	வெள்ளாடு
பறவைக்கறி	-	கோழிக்கறி, கௌதாரி, வானம்பாடி, கிளுவை
மீன்	-	வாளை, விலாங்கு

- One must avoid oily and spicy foods
- To regulate body temperature patient advised to take plenty of water
- - Patient was advised to take fruits like banana, pomegranate, Guava, grapes, mango to improve the semen production.
- - Patient was advised to take food items rich in vitamins and micronutrients (Flat bean, Bengal gram, Cashew nut, egg, spinach, drumstick, sea crab, garlic, etc
- - Day sleep should be avoided
- - The seeds of the fruit improve the semen count.

Diets to be restricted

கொள்ளு**,** மாங்காய்**,** பாகற்காய்**,** அகத்திகீரை

Life style management:

- Advice to avoid using of alcohol and smoking
- Try to be relaxed and do exercise daily
- Advice not to wear tight dresses like jeans pant, tight inner wears.
- Patients are adviced to take oil bath twice in a week
- Patients are adviced to take bath in river or take cold water bath .

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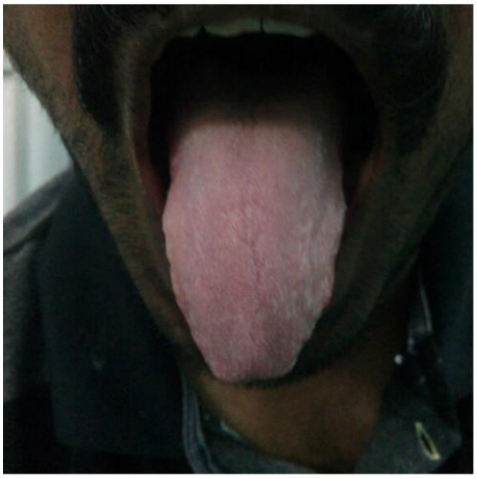
FROTHY URINE

FIG. NO : 02 KABHANEER



DRYNESS OF THE TONGUE

FIG.NO:01

NEIKURI - IRREGULAR SHAPE

GOVERNMENT SIDDHA MEDICAL COLLEGE AND HOSPITAL,

PALAYAMKOTTAI.

DEPARTMENT OF PG NOI NAADAL

A CLINICAL STUDY ON STANDARDIZATION OF SIDDHA DIAGNOSTIC METHODOLOGY, LINE OF TREATMENT AND DIETARY REGIMEN FOR

"AANN MALADU"(MALE INFERTILITY)

FORM I

SCREENING AND SELECTION PROFORMA

Date:

1. S.No _____

2. O.P No _____ I.P.No _____ Bed No: _____

3. Name of the patient _____

4. Age (years): ☐

5. Gender: M ☐ F F ☐

6. Occupation: _____

7. Income: _____

8.Address:

_____

_____

_____

9.Contact No: _____

10. E-mail : _____

CRITERIA FOR INCLUSION:

	YES	NO
1. Age between 20 and 50 years	☐	☐
2. Only undiagnosed patients with related symptoms	☐	☐
3.Male patient	☐	☐
4. History of not getting child after 2 years of marriage	☐	☐
5.Ready to give semen, urine samples when ever needed	☐	☐

CRITERIA FOR EXCLUSION:

	YES	NO
1. Diabetes mellitus	☐	☐
2. Hypertension	☐	☐
3. Hydrocele	☐	☐
4. Erectile dysfunction	☐	☐

Date: Signature:

GOVERNMENT SIDDHA MEDICAL COLLEGE AND HOSPITAL,

PALAYAMKOTTAI.

DEPARTMENT OF PG NOI NAADAL

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"AANN MALADU"(MALE INFERTILITY)

FORM I-B

ANCIENT SEMEN ANALYSIS TECHNIQUES

Selection of Healthy volunteers:

I. Age groups (20-30years)

II. Age groups (30-40years)

III. Age groups (40-50years)

Semen Analysis:

I. Take 1ml / 2ml/ 3ml of semen in a closed container.

	YES	NO
1. Color change	☐	☐ _____
2. Semen sinks in water	☐	☐ _____
3. Odor change	☐	☐ _____
4. liquification time (min)	☐	☐ _____
5. Fructose present	☐	☐ _____
6. Other Changes	☐	☐ _____

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"AANN MALADU"(MALE INFERTILITY)

FORM I-A

HISTORY PROFORMA

1. SI.No of the case: _____ Reg. No: _____

2. Name of the patient: _____ Height: _____ cms

Weight: _____ Kg

3. Age (years): _____

4.Date Of Birth: ☐☐ ☐☐ ☐☐☐☐

D D M M Y E A R

5.Time Of Birth: _____

6.Zodiac Sign : _____

7.Star Sign: _____

8.Full Moon Day/NewMoonDay
Crescent Moon / Wanning moon } (On the day of birth) _____

9.Time of arrival:

10. Educational Status:

1) Illiterate ☐ 2) Literate ☐ 3) Student ☐

4) Graduate/ Post graduate ☐

11. Nature of work:

1) Sedentary work ☐

2) Field work with physical labour ☐

3) Field work Executive ☐

12. Complaints and Duration:

13. History of present illness:

14. History of Past illness:

15. Habits:

	1. Yes	2. No	
Smoking	☐	☐	
(A.cigarette /B.Beedi No. of packets/day)	_____		
	Yes	No	Quantity
Alcohol (Occasional/Regular/day)	☐	☐	_____
Drug Addiction	☐	☐	_____
Betel nut chewer:	☐	☐	_____
Tea (No. of times/day)	☐	☐	_____
Coffee (No. of times/day)	☐	☐	_____
Milk	☐	☐	_____

Type of diet V ☐ NV ☐

16. Personal history:

Marital status: Married ☐ Unmarried ☐

Consanguineous Marriage: ☐ ☐

No. of children: Male: _____ Female: _____

17. Family history:

History of similar symptoms	Yes	No	
Father	☐	☐	_____
Mother	☐	☐	_____
Others	☐	☐	_____

18. GENERAL ETIOLOGY FOR **"AANN MALADU"**

	Yes	No
1.Mega noi	☐	☐
2.Metabolic disorder (Valarsithai matra seerkedu)	☐	☐
3.Jaundice	☐	☐
4.Hormonal disorders	☐	☐
5.Viral infections (ammai noi)	☐	☐
6. Occupation	☐	☐
7. Traumatic Cause	☐	☐

14. CLINICAL SYMPTOMS OF **“AANN MALADU”**

	Present	Absent
1. Frothy urine	☐	☐
2. Loss of appetite	☐	☐
3. Constipation	☐	☐
4. Painful coitus	☐	☐
5. Burning Micturation	☐	☐
6. Increased Body Temperature	☐	☐

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"AANN MALADU"(MALE INFERTILITY)

FORM II

CLINICAL ASSESSMENT

1. Serial No: _____ Reg. No: _____

2. Name: _____

3. Date of birth: | | | | | | | | |

D D M M Y E A R

4. Age: _____ years

5. Date: _____

GENERAL EXAMINATION:

1. Height: _____ cms.

3. BMI _____ (Weight Kg/ Height m2)

4. Temperature : _____ (°F):

5. Pulse rate: _____ /min

6. Heart rate: _____/min

7. Respiratory rate: _____ /min

8. Blood pressure: _____ mmHg

9. Pallor : Present ☐ Absent ☐ _____

10. Cyanosis : Present ☐ Absent ☐ _____

11. Clubbing : Present ☐ Absent ☐ _____

12. Pedal edema : Present ☐ Absent ☐ _____

13. Jugular vein pulsation: Present ☐ Absent ☐ _____

14. Lymphadenopathy : Present ☐ Absent ☐ _____

VITAL ORGANS EXAMINATION

	Palpable	Not-Palpable	
1.Stomach	☐	☐	_____
2. Liver	☐	☐	_____
3. Spleen	☐	☐	_____
4. Kidney	☐	☐	_____
	Normal	Affected	
5. Heart	☐	☐	_____
6. Lungs	☐	☐	_____
7. Brain	☐	☐	_____

SYSTEMIC EXAMINATION:

1. Gastrointestinal System _____
2. Respiratory System _____
3. Cardio Vascular System _____
4. Central Nervous System _____
5. Endocrine System _____
6. Uro Genital System:

a) Anatomy Of Penis Normal ☐ Abnormal ☐ _____

b) Scrotum	Present	Absent
Inspection - Swelling	☐	☐ _____
Palpation – Tenderness	☐	☐ _____

c) Testis	Present	Absent
Both Testis	☐	☐
Inspection - Swelling	☐	☐
Palpation - Tenderness	☐	☐
Varicocele	☐	☐

SIDDHA SYSTEM OF EXAMINATION

[1] ENNVAGAI THERVU [EIGHT-FOLD EXAMINATION]

I. NAADI (KAI KURI) (RADIAL PULSE READING)

(a) **Naadi Nithanam (Pulse Appraisal)**

1. Kaalam (Pulse reading season)

1. Kaarkaalam (Rainy season) ☐ 2.Koothirkaalam (Autumn) ☐

3. Munpanikaalam ☐ 4.Pinpanikaalam ☐

(Early winter) (Late winter)

5. Ilavenirkaalam ☐ 6.Muthuvenirkaalam ☐

(Early summer) (Late summer)

2. Desam (Climate of the patient's habitat)

1. Kulir ☐ 2. Veppam ☐

(Cool) (Hot)

3. Vayathu (Age) 1. 1-33yrs ☐ 2. 34-66yrs ☐ 3. 67-100 ☐

4. Udal Vanmai (General body condition)

1. Iyyalbu ☐ 2. Valivu ☐ 3.Melivu ☐

5. Naadiyin Vanmai (Expansile Nature)

1. Vanmai ☐ 2.Menmai ☐

6. Panbu (Habit)

1. Thannadai (Playing in) ☐ 2. Munnokku (Advancing) ☐ .Pinnokku (Flinching) ☐

4. Pakkamnokku (Swerving) ☐ 5. Puranadai (Playing out) ☐ 6.Illaitthal (Feeble) ☐

7. Kathithal (Swelling) ☐ 8.Kuthithal (Jumping) ☐ 9. Thullal (Frsiking) ☐

10. Azhunthal (Drowning) ☐ 11. Padutthal (Lying) ☐ 12. Kalatthal (Blending) ☐

13. Suzhalal (Revolving) ☐

(b) Naadi nadai (Pulse Play)

1. Vali ☐ 2 . Vali Azhal ☐ 3. Vali Iyyam ☐

4. Azhal ☐ 5. Azhal Vali ☐ 6. Azhal Iyyam ☐

7. Iyyam ☐ 8. Iyya vali ☐ 9. Iyya Azhal ☐

10.Mukkutram ☐

II.NAA (TONGUE)

1. Maa Padithal Present ☐ Absent ☐

Normal ☐ Abnormal ☐

A) Pattern of MaaPadithal Uniform ☐ Patchy ☐

B) Colour of MaaPadithal _____

2. Naavin Niram 1.Karuppu ☐ 2. Manjal ☐ 3. Velluppu ☐

(Colour) (Dark) (Yellow) (Pale)

3. Suvai(Taste sensation) 1.Kaippu ☐ 2.Pulippu ☐ Inippu ☐

Thani suvai (Bitter) (Sour) (Sweet)

Thontha suvai 4. Uppu ☐ 5. Kaarppu ☐ 6.Thuvarppu ☐

(Salt) (Tingent) (Astringent)

4. Vedippu 1. Present ☐ 2. Absent ☐

(Fissure)

5. Vai neer ooral 1.Normal ☐ 2.Increased ☐ 3.Reduced ☐

(Salivation)

Colour Normal (Colouress) ☐ Abnormal ☐ _____

6. Deviation 1. Present ☐ 2. Absent ☐ _____

7. Pigmentation 1.Present ☐ 2. Absent ☐ _____

Dot ☐ Patchy ☐

Area of Pigmentation ☐Tip ☐ Sides ☐ RootWhole ☐

III.NIRAM (COLOUR and COMPLEXION OF SKIN)

1. Iyalbana Niram

(Physiological)

1. Karuppu ☐ 2.Manjal ☐Velluppu ☐_____

(Dark) (Yellowish) (Fair)

2. Nirammaatram 1. Present ☐ 2. Absent ☐

(Pathological)

Localised ☐ Generalised ☐

Colour: Black_____Brown _____ White _____ Red _____ Orange_____

IV. MOZHI (VOICE)

1. Sama oli ☐ 2. Urattha oli ☐ 3. Thazhantha oli ☐

(Medium pitched) (High pitched) (Low pitched)

4. Sound from lungs ☐ (Sound is produced by the lungs when the patient is silent)

(Wheezing)

V. VIZHI (EYES)

1. Niram	Right	Left
a.Venvizhi	☐ Normal ☐ Abnormal	☐ Abnormal ☐ Normal
	☐ Manjal	☐ Manjal
	☐ Sivappu	☐ 2. Sivappu
	☐ Velluppu	☐ Velluppu
	☐ Pazhupu	☐ Pazhupu
	☐ Karuppu	☐ Karuppu

Red Lines Present ☐ Absent ☐

b. Keel Imai Neeki Paarthal

1. Sivapu ☐ 2. Velluppu ☐

(Red) (Pale)

2. Neerthuvam 1.Normal ☐ 2. Increased ☐ 3.Reduced ☐

(Moisture)

3. Erichchal 1.Present ☐ 2. Absent ☐

(Burning sensation)

4. Peelai seruthal 1.Present ☐ 2. Absent ☐

(Mucus excrements)

5. Change in vision 1. Present ☐ 2. Absent ☐

6. Protrusion of eye ball 1. Present ☐ 2. Absent ☐

7.Any other eye disease _____

VI. MEI KURI (PHYSICAL SIGNS)

INSPECTION

1. Swelling 1. Present ☐ 2. Absent ☐

2. Any Colour Change 1. Present ☐ 2. Absent ☐

3. Viyarvai 1. Normal ☐ 2. Increased ☐ 3. Reduced ☐

(Sweat)

PALPATION

1. Thanmai 1. Veppam ☐ 2. Mitha Veppam ☐ 3. Thatpam ☐

(Warmth) (Mild Warm) (Cold)

2. Thoduvali 1. Present ☐ 2. Absent ☐

(Tenderness)

3. Padhikapattaidathil Unarvu 1. Normal ☐ 2. Abnormal ☐_____

(Sensation)

1. Erichal ☐ 2. Arippu ☐ 3. Unachiinmai ☐

(Burning Sensation) (Itching) (Loss of sensation)

VII. MALAM (STOOLS)

1. Ennikkai (No of Times Passed) - / Day

2. Alavu a) Normal ☐ b) Increased ☐ c) Decreased ☐

(Quantity**)**

3. Niram 1. Karuppu ☐ 2. Manjal ☐

(Color) (Black) (Yellowish)

3. Sivappu ☐ 4. Velluppu ☐

(Reddish) (Pale)

5. Kalappu ☐ _____

4. Nature of stools

Bulky ☐ Leaned ☐ Watery ☐

5. Sikkal / Solid 1. Present ☐ 2. Absent ☐

(Constipation)

6. Sirutthal 1. Present ☐ 2. Absent ☐

(Poorly formed stools)

7. Kalichchal

1. Loose watery stools 1. Present ☐ 2. Absent ☐

2. Content of stool

1. Digested food 1. Present ☐ 2. Absent ☐

2. Seetham 1. Present ☐ 2. Absent ☐

(Watery and mucoid excrements)

Colour of Seetham 1. Venmai ☐ 2. Manjal ☐

7. Thanmai 1. Normal (Mitham) ☐ 2. Venmai ☐ 3. Seetham ☐

8. Stool passing with a) Mucous 1. Present ☐ 2. Absent ☐

b) Blood 1. Present ☐ 2. Absent ☐

9. History of habitual Constipation 1. Present ☐ 2. Absent ☐

VIII. MOOTHIRAM (URINE)

(a) NEER KURI (PHYSICAL CHARACTERISTICS)

1. Niram (colour) Normal ☐ Abnormal ☐

1. Milky purulent ☐ 2. Orange ☐

3. Red ☐ 4. Green ☐ 5.Dark brown ☐

6. Bright red ☐ 7. Black ☐ 8.Brown red or yellow ☐

2. Manam (odour) Yes No

Ammonical : ☐ ☐

Fruity : ☐ ☐

Others : _____

3. Edai: 10 ml _____ gm 50 ml _____ gm 100 ml _____ gm

a). (Specific gravity)

Normal ☐ _____ Increased ☐ _____ Decreased ☐ _____

b).pH

Acidic pH ☐ _____ Alkaline pH ☐ _____

4. Nurai (froth)

If froth present, colour of the froth : _____

Persistant ☐ Disappear ☐

5. Enjal (deposits)	**:**	Present	Absent
Clear	:	☐	☐
Cloudy	:	☐	☐

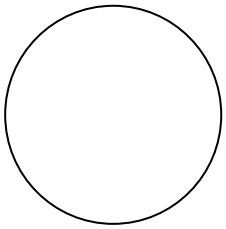
6. Alavu (24 hrs urine volume)		Yes	No	
Normal (1.2-1.5 lt/day)	:	☐	☐	_____
Polyuria (>2lt/day)	:	☐	☐	_____
Oliguria (<500ml/day)	:	☐	☐	_____
Anuria	:	☐	☐	_____

7. Murai		Present	Absent	
a)	Siruthu irangal	☐	☐	_____
b)	Chottu Chottai irangal	☐	☐	_____
c)	Kaduthu irangal	☐	☐	_____
d)	Neer adaithal	☐	☐	_____
e)	Thannai ariyamal neer irangal	☐	☐	_____
f)	Ninru Ninru irangal	☐	☐	_____

8. Kalappu

		Present	Absent	
a)	Ratham kalanthirangal	☐	☐	_____
b)	Vellai kalanthirangal	☐	☐	_____
c)	Sunnaneer Polirangal	☐	☐	_____
d)	Seel kalanthirangal	☐	☐	_____
e)	Karkal kalanthirangal	☐	☐	_____
f)	Savvu (or) Thasai kalanthirangal	☐	☐	_____

b) NEI KURI (oil spreading sign)



1. Aravam (V) ☐

   (Serpentine fashion)

2. Mothiram(P) ☐

   (Ring)

3. Muthu (K) ☐

   (Pearl beaded appear)

4. Aravil Mothiram (VP) ☐

   (Ring fashion in serpentine)

5. Aravil Muthu (VK) ☐

   (Pearl fashion in serpentine)

☐

6. Mothirathil Muthu (PK)

(Pearl fashion in ring) ☐

7. Mothirathil Aravam (PV)

(Serpentine fashion in ring) ☐

8. Muthil Aravam (KV)

(Serpentine fashion in pearl)

9. Muthil Mothiram (KP) ☐

(Ring fashion)

10. Sathiyam ☐

(Curable)

11. Asathiyam ☐

(Incurable)

12. Mellena paraval ☐

(Slow spreading)

13. Viraivaka Paraval ☐

(Speed spreading)

12.others:_____ ☐

[2]. **IYMPORIGAL /IYMPULANGAL (Penta sensors and its modalities)**

	1. Normal	**2. Affected**
1. Mei (skin)	☐	☐
2. Vaai (Tongue)	☐	☐
3. Kann (Eyes)	☐	☐
4. Mookku (Nose)	☐	☐
5. Sevi (Ears)	☐	☐

[3]. KANMENTHIRIYANGAL /KANMAVIDAYANGAL

(Motor machinery and its execution)

	1. Normal	**2. Affected**
1. Kai (Hands)	☐	☐
2. Kaal (Legs)	☐	☐
3. Vaai (Mouth)	☐	☐
4. Eruvai (Analepy)	☐	☐
5. Karuvaai (Birth canal)	☐	☐

[4]. YAKKAI (SOMATIC TYPES)

Characters	Vatha Constitution		Pitha Constitution		Kaba Constitution	
Built and appearance	Lean and lanky, lengthy built		Moderate built		Short, uniform thickness, broad built.	
Skin - colour & Complexion	Dark and light admixed complexion. Dry skin		Red and Yellow. Wrinckles		Yellowish White, Flesy, flappy and shiny	
Bones and Joints	Cracking sound of joints on walking with prominent joints		Thin covering of bones and joints by soft tissue		Plumpy joints and limbs	
Hair and Eyelashes	Split hair and dark eyelashes		Sparse hair with graying		Dark and Dense hair	
Appearance of Eyes	Lengthy Eyes		Easily suffusing eyes due to heat and alcohol		Sparkling eyes	
Vision	Long sight		Short sight		Clear sight	
Voice	Clear and high pitched voice		Clear and medium pitched Voice		Husky and unclear. Low pitched voice	
Tongue	Lengthy, sharp ended tongue with black patches		Medium and yellow or red coloured		Blunt, thick tongue with white coated	
Appetite	Scant appetite for cold food items		Increased appetite and intolerance to hunger, thirst , heat		Less appetite and tolerant to hunger, thirst, heat	
Taste	Desire for pungent, salt, sweet, heat		Desire for bitter, sweet, astringent		Desire for sour, bitter, astringent	
Sleep	Sleeping with half closed eyes		Medium sleep		Deep sleep	
Dreams	Flying dreams around the hills, sky. Walking around the dense forest.		Seeing like yellow colour flowers, fire, sun, thunder etc.		Seeing the cooling places like lotus in the pond,.	
Strength	Poor strength		Medium strength		Immense strength	

Character	Tamogunam		Rajogunam		Sathuvagunam	
Special Character	In generosity		discipline, good habits, eagerness		Discipline and increased knowledge	
Knowledge	Oscillation mind		Brilliance		Genius	
Sexual activity	Loss of libido		Desire in sexual activity		Loss of libido	

RESULTANT SOMATIC TYPE: _____

[5] GUNAM

1. Sathuva Gunam ☐

2. Rajo Gunam ☐

3. Thamo Gunam ☐

[6] **KOSAM**

	Normal	**Affected**	
1. Annamaya kosam	☐	☐	_____
2. Praanamaya kosam	☐	☐	_____
3. Manomaya kosam	☐	☐	_____
4. Vingnanamaya kosam	☐	☐	_____
5. Aanandamaya kosam	☐	☐	_____

[7] UYIR THATHUKKAL

A. VALI

	1. Normal	**2. Affected**	
1. Uyirkaal (Praanan)	☐	☐	_____
2. Keel nokung kaal (Abaanan)	☐	☐	_____
3. Nadukkaal (Samaanan)	☐	☐	_____
4. Mel nokung kaal (Udhanan)	☐	☐	_____
5. Paravung kaal (Viyaanan)	☐	☐	_____
6. Naahan (Higher intellectual function)	☐	☐	_____
7. Koorman (Air of yawning)	☐	☐	_____
8. Kirukaran (Air of salivation/Nasal secretion)	☐	☐	_____
9. Devathathan (Air of laziness)	☐	☐	_____

10. Dhananjeyan ☐ ☐ _____

(Absence of Praanan this air

that acts on death) (Cell/Percentage)

B. AZHAL **1. Normal** **2. Affected**

1. Analapittham ☐ ☐ _____

(Gastric juice)

2. Prasaka pittham ☐ ☐ _____

(Bile)

3. Ranjaka pittham ☐ ☐ _____

(Haemoglobin)

4. Aalosaka pittham ☐ ☐ _____

(Aqueous Humour)

5. Saathaka pittham ☐ ☐ _____

(Life energy)

C. IYYAM

1. Normal **2. Affected**

1. Avalambagam ☐ ☐ _____

(Serum)

2. Kilethagam ☐ ☐ _____

(saliva)

3. Pothagam ☐ ☐ _____

(lymph)

4. Tharpagam ☐ ☐ _____

(cerebrospinal fluid)

5. Santhigam ☐ ☐ _____

(Synovial fluid)

[8] UDAL THATHUKKAL

SAARAM

INCREASED SAARAM (CHYLE)	DECREASED SAARAM(CHYLE)
Loss of appetite ☐	Loss weight ☐
Excessive salivation ☐	Tiredness ☐
Loss of perseverance ☐	Dryness of the skin ☐
Excessive heaviness ☐	Diminished activity of the sense organs ☐
White musculature ☐	
Cough, dysponea, excessive sleep ☐	
Weakness in all joints of the body ☐	

SAARAM: INCREASED ☐ DECREASED ☐ NORMAL ☐

B. CENNEER:

INCREASED CENNEER(BLOOD)		DECREASED CENNEER(BLOOD)	
Boils in different parts of the body	☐	Anemia	☐
Anorexia	☐	Tiredness	☐
Mental disorder	☐	Neuritis	☐
Spleenomegaly	☐	Lassitude	☐
Colic pain	☐	Pallor of the body	☐
Increased pressure	☐		
Reddish eye and skin	☐		
Jaundice	☐		
Haematuria	☐		
CENNEER: NORMAL	☐	INCREASED ☐	REDUCED ☐

[C]. OON

INCREASED OON (MUSLE)	DECREASED OON (MUSLE)
Cervical lymphadenitis ☐	Impairment of sense organs ☐
Venerial ulcer ☐	Joint pain ☐
Swelling in face, abdomen, thigh, genitalia ☐	Muscles of Jaw, gluteus gets wrinckled. ☐
Hyper muscular in the cervical region ☐	Shortening of male genitalia ☐

OON: NORMAL ☐ INCREASED ☐ REDUCED ☐

D. KOZHUPPU

INCREASED KOZHUPPU (ADIPOSE TISSUE)	DECREASED KOZHUPPU (ADIPOSE TISSUE)
Cervical lymph adenitis ☐	Pain and weakness in the hip region ☐
Venereal ulcer ☐	Disease of the spleen ☐
Swelling in face, abdomen, thigh, genitalia ☐	Emaciation ☐
Hyper muscular in the cervical region ☐	
Dyspnoea on mild exhaustion ☐	
Tiredness Sagging muscles in the gluteus, abdomen, thigh, breast ☐	

KOZHUPPU: NORMAL ☐ INCREASED ☐ REDUCED ☐

E. ENBU

INCREASED ENBU (BONE)	DECREASED ENBU (BONE)
Excess growth in bones ☐ teeth, Nail and Hair	Joint pain ☐ Loosening of teeth ☐ Splitting of nail and hair ☐ Falling of hair ☐

ENBU: NORMAL ☐ INCREASED ☐ REDUCED ☐

F. MOOLAI

INCREASED MOOLAI (BONE MARROW)	DECREASED MOOLAI (BONE MARROW)
Heaviness of the body ☐ Swollen eyes ☐ Swollen phalanges ☐ chubby fingers ☐ Oliguria ☐ Non healing ulcer ☐	Osteoporosis ☐ Sunken eyes ☐

MOOLAI: NORMAL ☐ INCREASED ☐ REDUCED ☐

G. SUKKILAM / SURONITHAM

INCREASED SUKKILAM/SURONITHAM (SPERM OR OVUM)	DECREASED SUKKILAM/SURONITHAM (SPERM OR OVUM)
Infatuation and lust towards women / men ☐ Urinary calculi ☐	Failure in reproduction ☐ Pain in the genitalia ☐ Decreased the semen excretion ☐

SUKKILAM/SURONITHAM : NORMAL ☐ INCREASED ☐ REDUCED ☐

[9] MUKKUTRA MIGU GUNAM

I. Vali Migu Gunam	**1. Present**	**2. Absent**
1. Emaciation	☐	☐
2. Complexion – blackish	☐	☐
3. Desire to take hot food	☐	☐
4. Shivering of body	☐	☐
5. Abdominal distension	☐	☐
6. Constipation	☐	☐
7. Insomnia	☐	☐

8. General Weakness ☐ ☐

9. Defect of sense organs ☐ ☐

10. Giddiness ☐ ☐

11. Lake of interest ☐ ☐

II. Pitham Migu Gunam **1. Present** **2. Absent**

1. Yellowish discoloration Of skin ☐ ☐
2. Yellowish discoloration Of the eye ☐ ☐
3. Yellow colored urine ☐ ☐
4. Yellowness of faces ☐ ☐
5. Increased appetite ☐ ☐
6. Increased thirst ☐ ☐
7. Burning sensation over the body, palm and sole ☐ ☐
8. Sleep disturbance ☐ ☐

III. Kapham migu gunam **1. Present** **2. Absent**

1. Increased salivary secretion ☐ ☐
2. Reduced activeness ☐ ☐
3. Heaviness of the body ☐ ☐
4. Pale, white, pinkish color ☐ ☐
5. Chillness of the body ☐ ☐
6. Reduced appetite ☐ ☐
7. Eraippu ☐ ☐
8. Increased sleep ☐ ☐

[10]. NOIUTRA KALAM

1. Kaarkaalam ☐ 2.Koothirkaalam ☐
3. Munpanikaalam ☐ 4.Pinpanikaalam ☐
5. Ilavanirkaalam ☐ 6.Muthuvenirkaalam ☐

[11]. NOI UTRA NILAM

1. Kurunji ☐ (Hilly terrain)

2. Mullai ☐ (Forest range)

3. Marutham ☐ (Plains)

4. Neithal ☐ (Coastal belt)

5. Paalai ☐ (Desert)

GOVERNMENT SIDDHA MEDICAL COLLEGE AND HOSPITAL,

PALAYAMKOTTAI.

DEPARTMENT OF PG NOI NAADAL

A CLINICAL STUDY ON STANDARDIZATION OF SIDDHA DIAGNOSTIC METHODOLOGY, LINE OF TREATMENT AND DIETARY REGIMEN FOR

"AANN MALADU"(MALE INFERTILITY)

FORM-III

LABORATORY INVESTIGATIONS

1. Serial No_____O.P No: _____ Lab.No_____ Reg No. _____

2. Name: _____

3. Date of birth:

D D M M Y E A R

4. Age: _____ years

5. Date of assessment: _____

Urine Examination

6. Sugar _____

7. Albumin _____

8. Deposits _____

9. MICROSCOPIC EXAMINATION OF Urine for white blood cells and blood cells_____

Blood

10. TC _____ Cells/cu mm

11. Differential Count:

P___% L _____% E _____% M _____% B_____%

12.Hb _____ gms%

13. ESR At 30 minutes _____ mm at 60 minutes _____mm

14. Blood Sugar-(RBS) _____mgs%

15. Semen Analysis:

a) Volume:
b) pH:
c) Liquification Time:
d) Viscosity:
e) Sperm Count (millions/ml):
f) Motility:
    1) Rapid Progressive Motility:
    2) Sluggish Progressive Motility:
    3) Non Progressive Motility:
    4) No Motility

g) Morphology:

Normal-

Pin, Giant & Amorphous heads-

h) Other Microscopic Examination:

i) Fructose :

j) Semen sinks in water

16.USG (KUB) VIEW

Date: **Signature of the Doctor**

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"AANN MALADU"(MALE INFERTILITY)

Register No:321315002,

FORM IV A

INFORMED WRITTEN CONSENT FORM

I ……..exercising my free power of choice, hereby give my consent to be included as a subject in the diagnostic trial entitled A study on "**AANN MALADU**". I will be required to undergo all routine examinations. I may be asked to give semen, urine and blood samples during the study.

I have been informed about the study to my satisfaction by the attending investigator and the purpose of this trial and the nature of study and the laboratory investigations. I also give my consent to publish my semen, urine samples photographs in scientific conferences and reputed scientific journals for the betterment of clinical research.

I am also aware of my right to opt out of the trial at any time during the course of the trial without having to give the reasons for doing so.

Signature /thumb impression of the patient:

Date :

Name of the patient :

Signature of the investigator :

அரசு சித்த மருத்துவ கல்லூரி - பாளையங்கோட்டை

பட்ட மேற்படிப்பு நோய்நாடல் துறை

பதிவு எண்: 321315002

ஒப்புதல் படிவம்

ஆய்வாளரால் சான்றளிக்கப்பட்டது

நான் இந்த ஆய்வை குறித்த அனைத்து விபரங்களையும் நோயாளிக்கு புரியும் வகையில் எடுத்துரைத்தேன் என உறுதியளிக்கிறேன்.

தேதி: **கையொப்பம்:**

இடம்: **பெயர்:**

நோயாளியின் ஒப்புதல்

நான் ---------- என்னுடைய சுதந்திரமாக தேர்வு செய்யும் உரிமையைக் கொண்டு இங்கு தலைப்பிடப்பட்ட **ஆண் மலடு** நோய் கணிப்பதற்கான மருத்துவ ஆய்விற்கு என்னை உட்படுத்த ஒப்புதல் அளிக்கிறேன்.

என்னிடம் இந்த மருத்துவ ஆய்வின் காரணத்தையும், மருத்துவ ஆய்வுக்கூட பரிசோதனைகள் பற்றி திருப்தி அளிக்கும் வகையில் ஆய்வு மருத்துவரால் விளக்கிக் கூறப்பட்டது.

நான் இந்த மருத்துவ ஆய்வின் போது காரணம் எதுவும் கூறாமல், எப்பொழுது வேண்டுமானாலும் இந்த ஆய்விலிருந்து என்னை விடுவித்து கொள்ளும் உரிமையை தெரிந்திருக்கின்றேன்.

தேதி: **கையொப்பம்:**

இடம்: **பெயர்:**

சாட்சிக்காரர் கையொப்பம்:

பெயர் :

உறவுமுறை :

GOVERNMENT SIDDHA MEDICAL COLLEGE AND HOSPITAL,

PALAYAMKOTTAI.

DEPARTMENT OF PG NOI NAADAL

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"AANN MALADU"(MALE INFERTILITY)

FORM - IV-E

PATIENT INFORMATION SHEET

PURPOSE OF RESEARCH AND BENEFITS:

The diagnostic research study in which your participation is proposed to assess the diagnostic methods in Siddha methodology in "AANN MALADU" patients. It is expected that you would benefit from this study. Knowledge gained from this study would be of benefit to patients suffering from such conditions for the diagnosis and prognosis.

STUDY PROCEDURE:

You will be interviewed and examined as OP and IP patients at the study centre. At the first visit the physician will conduct a brief physical examination and assess the condition followed by Ennvagai thervu and routine blood and urine analysis. After matching the inclusion criteria you will be included in this study and you will be examined on the basis of Ennvagai thervu & ThekiyinIllakkanam.

POSSIBLE RISK:

During this study there may be a minimum pain to you while drawing blood sample.

CONFIDENTIALLITY:

Your medical records will be treated with confidentiality and will be revealed only to other doctors / scientists. The results of this study may be published in a scientific journal, but you will not be identified by your name.

YOUR PARTICIPATION AND YOUR RIGHTS:

Your participation in this study is voluntary and you may be withdrawn from

This study anytime without having to give reasons for the same. You will be informed about the findings that occur during the study. If you do agree to take part in this study, your health record will need to made available to the investigators. If you don't wish to participate at any stage, the level of care you receive will in no way to be affected.

The Ethics committee cleared the study for undertaking at OPD and IPD, GOVERNMENT SIDDHA MEDICAL COLLEGE, PALAYAMKOTTAI. Should any question arise with regards to this study you contact following person.

P.G scholar : Dr. P. Arul Nehru,
Department of PG Noi Naadal,
Govt. Siddha medical college,
Palayamkottai - 627 002.
Email: arul.tamilan2010@gmail.com
Mobile no :9965481145

அரசு சித்த மருத்துவ கல்லூரி - பாளையங்கோட்டை
பட்ட மேற்படிப்பு நோய்நாடல் துறை
நோயாளியின் தகவல் படிவம்

ஆய்வின் நோக்கமும் பயனும்:

தாங்கள் பங்கெடுத்துக் கொள்ளும் இவ்வாய்வு சித்த மருத்துவ முறையில் நோயை கணிப்பதற்கான ஓர் ஆய்வுமுறை. இவ்வாய்வு தங்களின் நோய்கணிப்பை பற்றியும் நாளுக்கு நாள் இருக்கும் நோயின் தன்மை பற்றியும் அறிய உதவும்.

ஆய்வுமுறை:

தாங்கள் நேர்காணல் மற்றும் பரிசோதனைகளின் மூலம் உள்நோயாளி, வெளிநோயாளி பிரிவில் ஆய்வு செய்யப்படுவீர்கள். முதல் நேர்காணலின்போது ஆய்வாளரால் உடல் பரிசோதனை, நாடி, நீர், மலம, மற்றும் இரத்த பரிசோதனை செய்து குறிப்பிட்ட குறிகுணங்கள் இருப்பின் இவ்வாய்விற்காக எடுத்துக்கொள்ளப்படுவீர்கள்.

நேரும் உபாதைகள்:

இவ்வாயில் இரத்த பரிசோதனைக்காக இரத்தம் எடுக்கும்போது சிறிது வலி ஏற்படலாம்.

நம்பகத்தன்மை:

தங்களின் மருத்துவ ஆவணங்கள் அனைத்தும் மருத்துவர் ஆய்வாளர் அல்லாத பிறரிடம் தெரிவிக்கப்படமாட்டாது.

நோயாளியின் பங்களிப்பும் உரிமைகளும்:

இவ்வாய்வில் தங்களின் பங்களிப்பு தன்னிச்சையானது. இவ்வாய்வில் தாங்கள் ஒத்துழைக்க இயலவில்லையெனில் எப்பொழுது வேண்டுமானாலும் காரணம் எதுவும் கூறாமல் விலகிக்கொள்ளலாம். இவ்வாய்வின்போது அறியப்படும் தகவல்கள் தங்களுக்கு தெரிவிக்கப்படும். நோயாளியின் ஒப்பதலுக்கிணங்க நோய்கணிப்பு விவரங்களை ஆய்வாளர் பயன்படுத்திக்கொள்வார். நோயாளி ஆய்வினிடையே ஒத்துழைக்க மறுத்தாலும், எந்த நிலையிலும் நோயாளியை கவனிக்கும் விதம் பாதிக்கப்பட மாட்டது. நிறுவன நெறிமுறை குழுமம் மேற்கண்ட ஆய்வினை மேற்கொள்ள ஒப்புதல் அளித்துள்ளது. ஆய்வு குறித்த சந்தேகங்கள் இருப்பின் கீழ்கண்ட நபரை தொடர்பு கொள்ளவும்.

பட்டமேற்படிப்பாளர்: மரு. ப.அருள் நேரு,
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